UKTI Inward Investment Evaluation Case Studies

Final report to UK Trade & Investment

March 2009

SQWconsulting

Contents

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Executive Summary

Introduction

1. SQW Consulting (SQW) was commissioned by UK Trade & Investment (UKTI) to undertake an economic impact evaluation of their support for inward investment activities. The research uses case studies to investigate the impact of UKTI's support in attracting foreign direct investment (FDI) and assesses the extent of the economic benefits, including spillover effects.

2. The work was carried out throughout 2008, beginning with a scoping phase (comprising of an extensive literature review, tested through an academic seminar, which identified the research themes), developing into a fieldwork phase (two pilot case studies followed by 10 main case studies) and concluding with analysis and reporting.

Economic rationale for inward investment support

3. The economic rationale for government support for inward investment was reviewed in DTI Economics paper no 18: International Trade and Investment – the Economic Rationale for Government Support[1] which examined three key elements.

Benefits of inward investment

- **Direct and indirect productivity effects on UK firms**: the multinationals that constitute foreign direct investors into the UK tend to have higher than average productivity so when they enter/expand within the UK market, average UK productivity rises. They also bring with them access to new ideas and technologies and superior organisational skills.

- **Competition effects:** competition is stimulated by the opportunity for foreign firms to compete with domestic ones, both for resources (labour and business assets) and in markets for products and services where imports alone would not compete as effectively.

- **Innovation effects:** R&D intensity is strongly linked to business internationalisation in that multinationals tend to have higher R&D intensity. However, this tends to be only in their home country and hence R&D intensity in the host country is likely to be influenced by the ability of inward investors to gain access to key knowledge networks.

Barriers and market failure

- There are barriers to inward investment (e.g. in relation to FDI understanding of legal requirements, recruiting staff, obtaining staff visas and finding suitable suppliers)

[1] International Trade and Investment – the economic rationale for government support: DTI Economics paper no 18 (July 2006)

which are likely to be attributable to market and institutional failures. If left unaddressed, these barriers would significantly reduce the ability of the UK to achieve the full potential benefits from inward investment

- The UK needs to compete in the fast changing world economy and this depends on its ability to exploit the social networks underpinning bilateral investment relationships with these emerging economies
- Knowledge intensive foreign firms will not fulfil their contribution to competition, innovation and R&D if they experience barriers to accessing the right networks within the UK
- Since the evidence suggests that it is the most innovative and high productivity businesses that engage in international investment, market entry barriers will have a disproportionate effect on this group, with adverse consequences for UK economic performance.

Government support

4. Given the barriers identified, the following areas of support were identified as being key:

- Strengthening the social networks that underpin foreign investment by helping individual FDIs gain access to key contact and knowledge networks in the UK and by acting as a trusted intermediary
- Providing access to information and advice for FDIs that the private sector alone would not or could not provide
- Facilitating beneficial co-operation among businesses, enabling them to work together to develop investment opportunities
- Strengthening the internationalisation capabilities of innovative and high growth businesses.

5. A major element of the current work has been to build on the evidence base used in Economics Paper no 18 both in terms of examining the latest academic literature on inward investment and through the primary research undertaken.

Overview of UKTI support for inward investment

6. UKTI support for inward investment has undergone a major development since the publication of its five year strategy in 2006, 'Prosperity in a Changing World'. Prior to that, inward investment was handled by a stand-alone group, providing support under what was termed the 'classic model'. This model gave the International Sales team a purely reactive role. Although a new model has now been introduced, the International Sales team still provide this reactive service to non high value clients.

7. Since 2006, the International Sales team has been given a more proactive role in targeting high value (i.e. R&D intensive) inward investment prospects. This involves segmenting the

market in terms of companies and types of project and focussing on the key sectors defined by BERR. The target names are then refined in consultation with the Overseas Posts and Regional Development Agencies and Devolved Administrations ((R)DAs). In operation, the International Sales team sets up a virtual team to pursue each target and writes a pursuit plan. The aim of the work is to build a long term relationship with each high value client.

8. Whilst the form of support delivery provides a backdrop to the current research, the case studies were not designed to test the difference between the models. Rather the emphasis was on capturing the wider effects of the presence of the FDI in the UK.

Methodology

9. Given the perceived complexities of the research, the work was divided into three main phases.

Scoping phase

- **Literature review:** this involved a detailed examination of the recent academic literature on inward investment. It built upon the findings set out in the DTI Economics paper no 18 and helped identify areas for further research
- **Development of the case study approach:** Using the findings of the literature review, a set of research instruments was developed covering both the foreign investor companies and their market contacts

Fieldwork

10. This fell into two sections:

- Pilot case studies with three FDI businesses based in London and their stakeholders – two of which yielded results worth reporting
- 10 further case studies based on companies and their stakeholders located in a variety of English regions

Analysis and reporting

11. The analysis and reporting focused on the impact of UKTI support on the assisted FDI companies and the size and scope of spillover benefits generated by the presence of the foreign investor companies in the UK market. The results of the analysis were then used to review the economic rationale for encouraging inward investment.

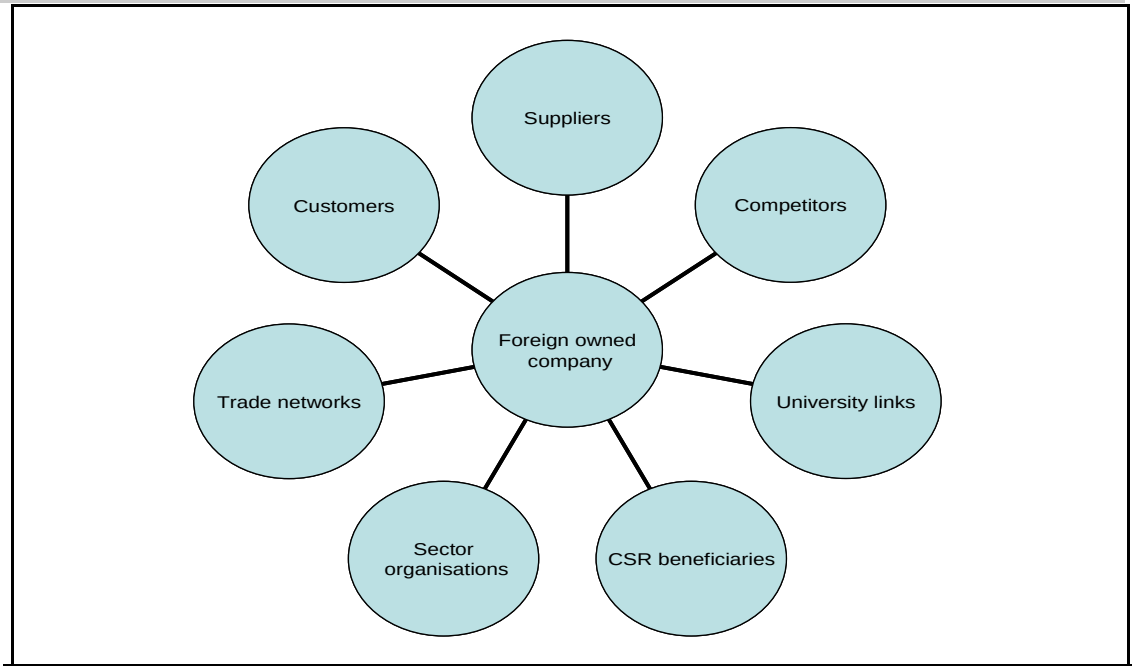
Use of a case study approach

12. An extended case study methodology was chosen to allow for the gathering of qualitative firm level information (an approach which built on the quantitative methodology employed in the academic literature), with a view to gaining an understanding of the transmission/spillover channels and dynamic impact (i.e. the changing nature) of inward investment.

13. The case study candidates were drawn from companies investing in the UK in the financial years 2004/5 and 2005/6. The reason for the time period chosen was to allow enough time to have passed for the impact of the investments to show through whilst at the same time ensuring the investment was recent enough for consultees to be able to recall the details.

14. The novel aspect of the extended case study approach was that it included consultations not only with the FDI but also with their market contacts as shown in Figure 1.

Figure 1: Potential spillover recipients



Source: SQW

15. The consultations with the range of connected parties were used to examine the various potential forms of spillover identified through the literature review, as follows:

- **Vertical spillovers** – from supplier and customer linkages
- **Horizontal spillovers** – from migration of skilled workers to, and demonstration effects on, competitors and from membership of trade networks and sector organisations
- **Positive and negative spillovers** (depending on the motivation of the inward investors) – from links with the research base (as well as acquisition of R&D intensive domestic firms)
- **Improvements in absorptive capacity** – through capacity building/CSR activities in deprived areas.

16. The case study approach also allowed for an assessment of the impact of the support at each stage of the inward investment support process. In some cases, this involved consultations with the FDI's global or European head office in addition to their main UK site. Their interaction with the UKTI Overseas Posts, the International Sales team in London and the relevant RDA was also examined.

The case study companies

17. Table 1 provides an overview of the 12 FDI companies that participated as case studies.

Table 1: Case study businesses

Firm	Activity	Region	Employees	UKTI assist?	New, relocation or expansion	Origin
A	Glass manufacturer	NW	188	Y	Expansion	Japan
B	Software sales	E of E	7	Y	New	US
C	Engineering	NE	800	N	Expansion	Norway
D	Internet advertising	London	4	Y	New	India
E	Specialist pet food manufacturer	SW	87	Y	Relocation/expansion	France
F	Bearings manufacturer	SW	185	Y	Expansion	Japan
G	Biotech research	NE	3	Y	New	Canada
H	Telecoms equipment	SE	300	Y	Relocation/expansion	China
I	Automotive parts distributor	WM	10	Y	Relocation/expansion	South Korea
J	Computerised machine tools	WM	560	N	Expansion	Japan
K	Investment bank	London	2	Y	New	India
L	Ad-tracking	London	4	Y	New	Canada

Source: SQW case studies

Key findings

Literature review

18. The literature review helped inform the approach and focus of the case studies. The review highlighted a number of factors that contribute to economic benefits and these were then developed as research questions.

19. The key findings from the literature on spillovers from FDI were as follows:

- *Nature of spillover effects* – productivity spillovers are thought to work through a number of channels, i.e. imitation, skills acquisition, competition and exports (Girma et al, 2007, Gorg and Greenaway, 2004). However, academic studies have had limited success in disentangling these effects.

- *Direction of spillovers* – the traditional hypothesis is that FDIs are motivated by the wish to exploit 'ownership' advantages in terms of technology and management

expertise (providing an opportunity for positive spillovers). However, emerging theory suggests that firms may be motivated by a desire to 'source technology' from the host country, resulting in 'reverse spillover' effects (Griffith et al, 2004, Whyman and Bainbridge, 2006)

- *Absorptive capacity* – spillovers are more likely to be observed in regions with sufficiently high R&D intensity and domestic firms capable of exploiting spillovers (Girma and Wakelin, 2002)
- *Importance of exporting* - domestic exporters tend to be better able to take advantage of superior technology available from foreign firms and enhance their productivity (Girma at al, 2007)
- *Position in the supply chain* – domestic productivity gains appear to be more pronounced where domestic firms purchase from industries with higher levels of FDI rather than selling to them (Driffield at al, 2002)
- *Labour* – inward FDI is expected to have a stronger impact on the demand for *skilled* labour rather than unskilled (Driffield et al, 2005)
- *Regional and spatial dimensions of spillovers* – spatial concentrations of high technology and R&D intensive firms increase the likelihood of knowledge spillovers. Also regional industrial structure affects the location of new entrants with firms in more agglomerated industries locating new plants near to other in the same industry (Devereux et al, 2003)
- *Regional limitations* – research has found that, the spillover effects from FDI tend to be stronger in the region in which the investment is based (Driffield, 2004; Girma and Wakelin, 2000)
- *Wage spillovers* – foreign firms paying higher wages than domestic firms can lead to a 'bidding up' of domestic wages (Driffield and Taylor, 2006, Driffield and Girma, 2003). However, this effect is greater for skilled as opposed to unskilled labour

Case studies

Motivations

20. The most common motivation for investing in the UK was to use the firm's technological, organisational or market strength to sell goods and services in UK and European markets. This implies that in most circumstances inward investment is technology exploiting rather than technology sourcing, i.e. the spillovers are positive rather than negative. The cases were a mixture of expansion (seven) or a new presence (five). The expansions built on the success the firms had already achieved in the UK measured by high productivity, good access to markets and opportunities to generate economies of scale. These included four manufacturers each making significant investments in UK plant. The new investments tended to be much smaller; sales offices, research and development or smaller service providers.

21. Motivations are broadly divided between supply (production conditions) and demand factors (opportunities through access to markets). Of these it is the demand factors that dominate. There were several examples of the opportunities of growing UK and European markets attracting new players in telecoms, software and finance. For the manufacturing expansions production conditions were more important (productivity of existing UK plants, access to land, planning, logistics and workforce). These were essential in increasing productivity and safeguarding the UK site. There were also several expansions which were related to reorganising activities, bringing together several operations at a single new plant and in another, refocusing the business on its more profitable activities.

22. There were a number of examples where new technology provided direct productivity improvements and several where it was the *sale* of new technology that was important. All four of the manufacturing cases were in the former group and were investing in plant. In the latter group new software and telecoms brought new technology to UK customers. There is the potential for this through the research and development investment. The others brought economies of scale or improvements in management which reduced costs and increased competitiveness.

UKTI influence

23. There was little evidence that the UKTI support was critical in the initial decisions to invest in the UK. This was usually made by the parent company independently. However, there was evidence in most cases that the support accelerated investment, reduced the risk or improved the quality of the investment.

24. At present the additionality of support is primarily measured through a fairly direct assessment of the influence of UKTI on decisions about the investment. Some of the comments made during the case studies raised the importance of several other aspects of the support:

- The initial contact with UKTI and the links into the RDAs are not only valuable in their own right in influencing investment, but also "set the tone" for the way in which the UK works with business. From some of the comments, it is apparent that this independence and interest is valued by investors. It provides reassurance about the professionalism of the UK support, whether or not it is used, and this experience could impact on future decisions.

- The first investment is only the start of a relationship and the benefits should be seen in this context. Once in the UK, individual plants must frequently make the case for expansion or the retention of their operation. Any help that can be provided in this can be important and a good relationship with UKTI/the RDA is then vital.

25. In both cases the professionalism of UKTI and satisfaction of clients can have an importance in the long run that is not easily captured through surveys and may be underestimated.

26. There was one example where UKTI's involvement has led to additional R&D, but none where there has been influence on use of local suppliers or additional training. Cases where

UKTI was able to secure visas more quickly for overseas employees could be argued to have impacted on the composition of the workforce.

Direct effects

27. The direct effects of the investment are the measure of additional economic activity that the new investments are considered to have generated on site. This depends on the scale of activity, the GVA that the investment creates and the employment that it supports. The *net effect* depends on the extent to which it replaces output that would have been produced otherwise.

28. In a large number of cases we found that the direct activity was not competing directly with UK firms and there was little direct product market displacement. In only three cases was there obvious, direct product displacement; the Chinese telecom investment, the Norwegian engineering company and the ad-tracking business; although in each of these cases the activities were displaced from other foreign-owned competitors.

29. Many of the firms (six) are exporters competing internationally in the European market, generating foreign exchange earnings for the UK. In five cases, the firm sold mainly in the domestic market, but usually in competition with other foreign-owned firms producing goods from outside the UK (import substitution). While product displacement was limited, labour market displacement is more likely to be significant and the extent of this depends on the potential alternative forms of employment. In a tighter labour market this will be higher than during periods of excess capacity.

30. The direct effects were particularly important in the manufacturing cases. Of these, there were few that were based on new technology or some unique knowledge. Instead experience and access to specific markets coupled with economies of scale were found more frequently to be the source of competitive advantage.

Innovation effects

31. Innovation effects reflect the way in which inward investment can improve customer or supplier productivity by providing access to new, improved or better value projects. To generate these effects the investor must sell into the domestic markets. The scale of these effects depends on how innovative the products are and how effectively they are used. The cases found the main factor to be new technology.

32. In our examples the products themselves were manufactured outside the UK with initially support and sales operations in the UK. It would seem a logical way in which foreign firms would bring new products into the market. In these cases the difference that the investment makes depends on the role that the sales and support office plays. This can be wholly additional, introducing firms to new technology, or partial, helping firms to use it effectively.

33. The case studies highlight two examples; one where new geographical positioning software has been used to improve productivity in the defence sector and a second where new technology offers better performance and value for a major UK firm.

34. In theory, these cases involve an increase in imports, but in practice they tended to displace other imported goods rather than UK products. The earlier analysis also highlighted how the initial sales presence of inward investors can develop into much larger investments such as R&D and potentially manufacture over time. Ideally the investment would offer entirely new or significantly improved inputs that do not compete with domestic output, enable increased productivity in clients and have the potential to be manufactured in the UK.

Spillovers

35. One rationale for using public resources to attract inward investment is that it generates positive externalities. These are effects for which the investor is not compensated and as a result the level of investment will be sub-optimal. The cases studies sought to identify examples of these spillover effects.

36. Even using case studies it is still difficult to identify spillovers, particularly as the firms and the various stakeholders may not be aware of them. However, there were sufficient examples to help illustrate the effects. The interviews found that the strength of these effects appeared to increase with age and, in fact, the openness to discussing them also was greater among firms that had been in the UK longer. It can take time to build trust and become confident in the firm's position in the region.

37. This seemed to be true for both horizontal relationships with competitors and networks as well as in relationships with suppliers. For example the two firms that had the greatest spillover impacts had both been in the UK for well over 10 years.

38. The cases found that, outside the manufacturing firms, the supplier spillovers were limited by the relatively weak supply chains. This is partly because of the global buying power that the FDIs bring but also the nature of some of the service sector operations which required few inputs.

39. The cases had a high level of participation in networks, but these were frequently for business development rather than sharing technical knowledge. There were some good links with universities, particularly among firms that had been here for some time. There was also a very good example of support for training through working with skills academies and through a local university to improve the pool of labour. In fact the cluster group in the North East (which includes a number of major foreign-owned engineering firms) works hard together to create agglomeration benefits.

Patterns of impact

40. Does the impact differ significantly by inward investment source and type or by motivation and location decision? Based on the case studies, a fairly clear pattern of benefits is apparent. New investments that bring access to new technology can rapidly generate positive productivity benefits for customers. They require less time to take effect, immediately improving inputs for domestic firms. In contrast, supplier and horizontal spillovers appear to take longer to develop as firms become more embedded in the economy. These spillovers also appear more likely to be restricted to the local or regional economy being based on

networks, supplies and the workforce while the innovation effects are the result of impacts on a more geographically spread set of customers.

41. The examples suggest that the sales and service cases were more likely to provide the innovation benefits and the manufacturing cases were more likely to offer the supply spillovers through their involvement in networks, supplier relationships and through investment in R&D. Table 2 summarises these effects.

Table 2: Summary of effects

	R&D	Spillover effects	Innovation effect	Direct effect on sector productivity
Glass manufacturer	Medium	Medium	Low	High
Software sales	None	None	High	Low
Engineering	Medium	High	Medium	Low
Internet advertising	None	Low	Low	Low
Specialist pet food manufacturer	None	Low	Medium	High
Bearings manufacturer	Medium	Medium	Low	Medium
Biotech research	High	High	-	-
Telecoms equipment	None	Medium	High	Low
Distributor of automotive parts	None	Medium	Medium	Medium
Computerised machine tools	High	High	Medium	High
Investment bank	None	Low	Low	Low
Publishing ad-tracking	None	Low	Medium	Low

Source: SQW case studies

Conclusions

42. In considering the cases, it appears that they all generate some form of positive or at worst, neutral effect on the economy. However, the scale of the effects varies considerably. Although a fairly partial view, it would suggest that the manufacturing cases here offer the strongest return. They tend to do more R&D, have at least some supply chain, are more likely to participate in networks and employ more people, all off which makes them more likely to generate spillover effects. They also tend to export more which means they are less likely to directly displace domestic firm output (although there will be some labour market displacement). In addition, the necessity for manufacturing to make significant physical investment in plant represents a more significant commitment to the UK economy. If this means they remain in the UK for longer, the research suggests that there will also be a greater chance of spillover effects being generated over time.

43. There are also significant benefits from the cases that brought new technology to the UK, even where it is imported, as well as the improvements this offers in terms of productivity for customer firms. These firms also bring competitive pressure to the market and create incentives to innovate.

44. The research generally supports the hypothesis that absorptive capacity is important, although in the one region where this may be an issue, the engineering firm in the North East was investing heavily in strengthening the labour market.

45. It was more difficult to determine whether there were stronger spillover effects forward, to customers, than backwards to suppliers as the literature suggests. There were good examples of innovation effects which led directly to productivity improvements for customers, and supplier effects, although these were arguably not as powerful.

46. Many of the benefits reported accrue to other foreign-owned businesses rather than domestic owned ones. In almost all the cases the main competitors were other international firms, often with a sizable presence in the UK. This makes it increasingly hard to determine the effects on just the domestic-owned sector. We also found that, in these cases, some of the major beneficiaries of strong innovation and competitive effects were the public sector and the large utilities.

47. The research also provided examples of the importance of time and trust for genuine spillovers to occur. These seemed to be more likely in the cases of expansion where a firm has been in the UK for some time.

48. In terms of the support provided by UKTI the case studies were broadly in line with the general monitoring findings. The majority of additionality generated is "partial", bringing projects forward, reducing risk or improving quality. The support helped identify appropriate locations, provide information and contacts and increase understanding of the business environment. Frequently firms reported that the support helped "smooth the way". We suggest that this role is perhaps more important than it may be given credit for by setting the tone for what should be the start of a long term relationship and in providing reassurance about the quality of the UK as good business environment.

49. Taking these factors into account, on the basis of the qualitative evidence provided by the 12 case studies, the conclusion is that the economic rationale for encouraging inward investment is sound. Identifying the benefits is clearly complex, but the case studies highlight good examples and illustrate how different investments contribute in quite different ways. There are examples of how FDI has introduced new and more efficient technology, provided better access to international markets and contributed to their networks and regional business development. Some cases have produced stronger benefits than others, but the case studies help understand how and why these occur.

Learning points for future research

50. This research used case studies as a way of illuminating some of the detail and effects of inward investment and UKTI's influence. The approach has provided a lot of advantages, but also a number of challenges. Using case studies provides a much stronger "back story" for each investment which is helpful in understanding how each investment has developed. It allows firms to identify the points that they consider important rather than be guided by a fixed set of questions and it enables the examples to focus on elements that illustrate specific points.

51. The process of interviewing stakeholders was also useful. As well as a source of information for spillover effects it acted as a "reality check" on some of the feedback from the FDI. This worked not only to identify effects that the FDI would not know about, but also to contradict claims that the FDI had made about its own influence.

52. However, case studies are not representative and this makes it less appropriate to draw general conclusions. We found it difficult to secure interviews and to ensure that we had the time to cover all the information we needed. This was also a challenge with stakeholders who had even less incentive to participate. Even where it was possible to get hold of stakeholders, there were limitations to the information they hade or were willing to pass on.

53. Even with these difficulties, the case study approach gathered sufficient material to illustrate some interesting effects, even if these were partial. There are also improvements that could be made. The process worked best when the RDAs were involved as they have a lot of knowledge about the firms and were able to provide a lot of help. Supplier and customer stakeholder interviews worked best where they had the clearest view of the impacts. Horizontal spillovers were far harder to identify as firms were reluctant to give contacts for competitors and networks were often unable to comment on specific contributions of the membership.

54. The process hinges on how willing the FDI is to provide contacts and permission to speak to stakeholders. If this exercise were repeated, it would be important to get a stronger commitment from the FDI to provide these at the outset.

55. There are some specific methodological issues that the UKTI intervention poses. The initial contact takes place overseas, often with different parties to those that eventually work in the UK. The support is only ever one part of a complex process for the firms involved and will often lead into other support delivered through the RDAs. The overall aim of securing productivity benefits for domestic firms which are not directly part of the process also makes assessing the impacts a challenge.

56. There is no single method that can capture these elements effectively and a mixed method approach is necessary to pull the threads together. There is merit in developing the use of case studies alongside other monitoring data, potentially using the two together. Additionally, once a series of companies had been recruited to act as case studies, they could form the basis of a longitudinal study. This could be used to test further the finding that the beneficial effects of FDI increase the longer the firm remains in the UK.

1: Introduction

Introduction

1.1 SQW Consulting (SQW) was commissioned by UK Trade & Investment (UKTI) to undertake an economic impact evaluation of their support for inward investment activities. The research uses case studies to investigate the impact of UKTI's support in attracting foreign direct investment (FDI) and assesses the extent of the economic benefits, including spillover effects.

1.2 The work was carried out throughout 2008, beginning with a scoping phase (comprising of an extensive literature review, tested through an academic seminar, which identified the research themes), developing into a fieldwork phase (two pilot case studies followed by 10 main case studies) and concluding with analysis and reporting.

Context

1.3 The current work arose from the need to address one of the priorities for further research identified in the Relative Benefits Study[2] undertaken in 2006. This report identified a gap in research on spillovers, i.e. it stressed the need to examine the factors which may affect the capacity of UK businesses to benefit from potential knowledge spillovers from foreign-owned firms. This is particularly important given the greater cost per business supported (compared with support for trade development) identified by the Relative Benefits Study. It seems reasonable to argue that a true comparison of the cost effectiveness of both forms of support will only be possible when the full range of beneficial factors can be taken into account.

1.4 The research is intended to sit alongside UKTI's monitoring systems. Three waves of inward investment monitoring have now been undertaken. The process involves a telephone survey of around 100 companies to which UKTI has provided inward investment support, undertaken approximately every six months and forms the basis for measuring the effectiveness of UKTI's work on inward investment. Its key objectives are to measure the performance of UKTI against key corporate targets and to collect contextual data to help understand the performance levels identified.

1.5 Whilst detailed in nature, the limitation of UKTI's monitoring system is that it concentrates only on the assisted FDI company and does not include interviews with companies in the wider UK economy. It therefore has limited ability to examine spillover effects.

Research objectives

1.6 The objectives of the research, as set out in the Invitation to Tender, were:

- to evaluate the economic impact and cost effectiveness of UKTI's support for attracting growing and retaining FDI, and

[2] 2004 – 2005 Study Of The Relative Economic Benefits of UK Trade & Investment Support For Trade And Inward Investment: Final Synthesis Report March 2006

- to assess and critically appraise the extent of (knowledge) spillovers from inward investment projects, in order to strengthen the economic rationale for government support for inward investment and to provide value for money for HM Government

1.7 A case study approach was chosen as being the best way of addressing the second objective and examining possible transmission mechanisms to capture wider benefits and spillover effects at a firm/plant level. Case studies provide a richness of qualitative data that has been highlighted as lacking in the academic literature. However, it was decided that whilst a case study methodology was a useful way of exploring the second objective, it would not yield sufficiently robust results to address the first issue.

Economic rationale for inward investment support

1.8 DTI Economics paper no 18: International Trade and Investment – the Economic Rationale for Government Support[3], reviewed a range of evidence to address three key elements of the economic rationale for government support for inward investment. These were whether there are potential benefits to UK prosperity from increased inward investment, whether there are barriers to inward investment arising from market failures which if not addressed would prevent these benefits from being fully realised and whether the government can intervene cost effectively to address these market failures, enabling business to generate sufficient additional benefit to justify the cost of intervention. The key conclusions were as follows:

Benefits of inward investment

- **Direct and indirect productivity effects on UK firms**: the multinationals that constitute foreign direct investors into the UK tend to have higher than average productivity so when they enter/expand within the UK market, average UK productivity rises. They also bring with them access to new ideas and technologies and superior organisational skills.

- **Competition effects:** competition is stimulated by the opportunity for foreign firms to compete with domestic ones, both for resources (labour and business assets) and in markets for products and services where imports alone would not compete as effectively.

- **Innovation effects:** R&D intensity is strongly linked to business internationalisation in that multinationals tend to have higher R&D intensity. However, this tends to be only in their home country and hence R&D intensity in the host country is likely to be influenced by the ability of inward investors to gain access to key knowledge networks.

[3] International Trade and Investment – the economic rationale for government support: DTI Economics paper no 18 (July 2006)

Barriers and market failure

1.9 The evidence available to Economics Paper no 18 suggested that:

- There are barriers to inward investment (e.g. in relation to FDI understanding of legal requirements, recruiting staff, obtaining staff visas and finding suitable suppliers) which are likely to be attributable to market and institutional failures. If left unaddressed, these barriers would significantly reduce the ability of the UK to achieve the full potential benefits from inward investment
- The UK needs to compete in the fast changing world economy and this depends on its ability to exploit the social networks underpinning bilateral investment relationships with these emerging economies
- Knowledge intensive foreign firms will not fulfil their contribution to competition, innovation and R&D if they experience barriers to accessing the right networks within the UK
- Since the evidence suggests that it is the most innovative and high productivity businesses that engage in international investment, market entry barriers will have a disproportionate effect on this group, with adverse consequences for UK economic performance.

Government support

1.10 Given the barriers identified, the following areas of support were identified as being key:

- Strengthening the social networks that underpin foreign investment by helping individual FDIs gain access to key contact and knowledge networks in the UK and by acting as a trusted intermediary
- Providing access to information and advice for FDIs that the private sector alone would not or could not provide
- Facilitating beneficial co-operation among businesses, enabling them to work together to develop investment opportunities
- Strengthening the internationalisation capabilities of innovative and high growth businesses.

1.11 A major element of the current work has been to build on the evidence base used in Economics Paper no 18 both in terms of examining the latest academic literature on inward investment and through the primary research undertaken.

Background - Delivery of support

1.12 UKTI support for inward investment has undergone a major overhaul since the publication of its five year strategy in 2006, 'Prosperity in a Changing World'. Prior to that, inward investment was handled by a stand-alone group, providing support under what was termed the

'classic model'. This model gave the International Sales team a purely reactive role. Although a new model has now been introduced, the International Sales team still provide this reactive service to non high value clients.

1.13 Since 2006, the International Sales team has been given a more proactive role in targeting high value (i.e. R&D intensive) inward investment prospects. This involves segmenting the market in terms of companies and types of project and focussing on the key sectors defined by BERR. The target names are then refined in consultation with the Overseas Posts and Regional Development Agencies and Devolved Administrations ((R)DAs). In operation, the International Sales team sets up a virtual team to pursue each target and writes a pursuit plan. The aim of the work is to build a long term relationship with each high value client.

1.14 In this role the International Sales team works very closely with the UKTI R&D team. Around 80 companies have been identified to be proactively targetted for inward investment. The International Sales team concentrates on this list of 80 but is also seeking to develop links with 20-30 high value companies on top of this (i.e. ones that just missed the main target list). The relationship with the (R)DAs is managed through the International Business Development Forum.

1.15 Whilst the form of support delivery provides a backdrop to the current research, the case studies were not designed to test the difference between the models. Rather the emphasis was on capturing the wider effects of the presence of the FDI in the UK. As discussed further in Section 2, the case study candidates were drawn from companies investing in the UK in the financial years 2004/5 and 2005/6 (and thus they did not benefit from the new support approach introduced in October 2006). The reason for the time period chosen was to allow enough time to have passed for the impact of the investments to show through whilst at the same time ensuring the investment was recent enough for consultees to be able to recall the details.

Report structure

1.16 Following this introduction, the remaining sections of the report are as follows:

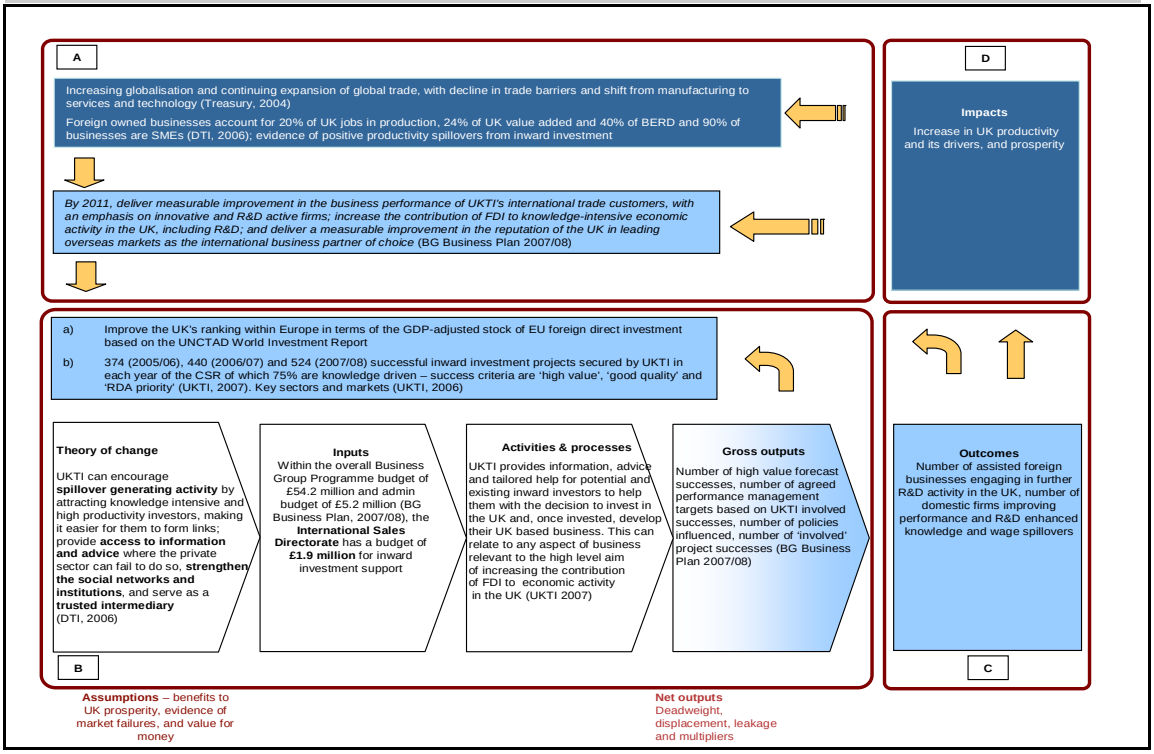
- Section 2 Methodology
- Section 3: Literature review and development of research propositions
- Section 4: Case study overview
- Section 5: Additionality of support and direct effects
- Section 6: Innovation effects
- Section 7: Spillovers
- Section 8: Conclusions
- Annexes: Case studies in full, bibliography and research instruments

2: Methodology

Overview of evaluation approach

2.1 In undertaking our impact assessment, our approach was guided by the elements of the logic model set out in Figure 2-1. The diagram below demonstrates how a case study methodology fits into the logic model.

Figure 2-1: Inward investment logic model



Source: UKTI/SQW

2.2 The logic model has guided our work in the following way:

- **Block A** sets out the market conditions and the policy context for the intervention. The eventual outcome of an evaluation includes an assessment, as far as possible from the lines of enquiry pursued, of to what extent UKTI's support activities have contributed to its strategic objective. In the current research, this assessment is based on the qualitative input from the case studies.

- We then went on (**Block B)** to test the assumptions about the benefits of inward investment to UK prosperity (including the role of spillovers) and the market and other failures that led UKTI to provide assistance for inward investment activities in order to test the validity of the rationale. We also examined the extent to which the objectives of the support addressed the identified rationale. This section of the work was tackled in two ways; through a review of the academic literature (see the next section of this report) and then through the fieldwork.

- The next stage of a quantitative assessment would be to consider, using UKTI's programme documents and monitoring data, what resources in terms of money and people were committed to UKTI's inward investment activities and what activities these produced. Given the focus on the investigation of spillover effects, this element of the evaluation was excluded from the work.

- Given the choice of a case study methodology, as detailed later in this section, the assessment of net outputs and outcomes (**Block C**) was limited to the results from a small number of examples. These case studies yielded in-depth qualitative responses but were not sufficiently robust in quantitative terms for generalisation. However, the case studies did produce a better understanding of the channels of spillovers and transmission mechanisms which can be used to inform policy and support.

- Thus, whilst impacts can be tracked through secondary indicators (**Block D**), it would be difficult from the current research to attribute improvements in UK productivity directly to UKTI's inward investment support activities.

Methodology

2.3 Given the perceived complexities of the research, the work was divided into three main phases, i.e. scoping, field work and reporting. The phases consisted of the following elements.

Scoping phase

- **Literature review:** this involved a detailed examination of the recent academic literature on inward investment. It built upon the findings set out in the DTI Economics paper no 18 and helped identify areas for further research

- **Development of the case study approach:** Using the findings of the literature review, we developed a set of research instruments covering both the foreign investor companies and their market contacts (see Figure 2-2 below)

Fieldwork

2.4 This fell into two sections:

- Pilot case studies with three FDI businesses based in London and their stakeholders – two of which yielded results worth reporting

- 10 further case studies based on companies and their stakeholders located in a variety of English regions

Analysis and reporting

2.5 The analysis and reporting focuses on the impact of UKTI support on the assisted FDI companies and the size and scope of spillover benefits generated by the presence of the foreign investor companies in the UK market. The results of the analysis have then been used to review the economic rationale for encouraging inward investment.

2.6 The results have also been used to consider the extent to which quantitative techniques might be employed in future to value the benefits of FDI to the UK economy and how UKTI's monitoring systems might be modified to capture some of these benefits (at least in terms of direct market effects).

The use of case studies

Why case studies?

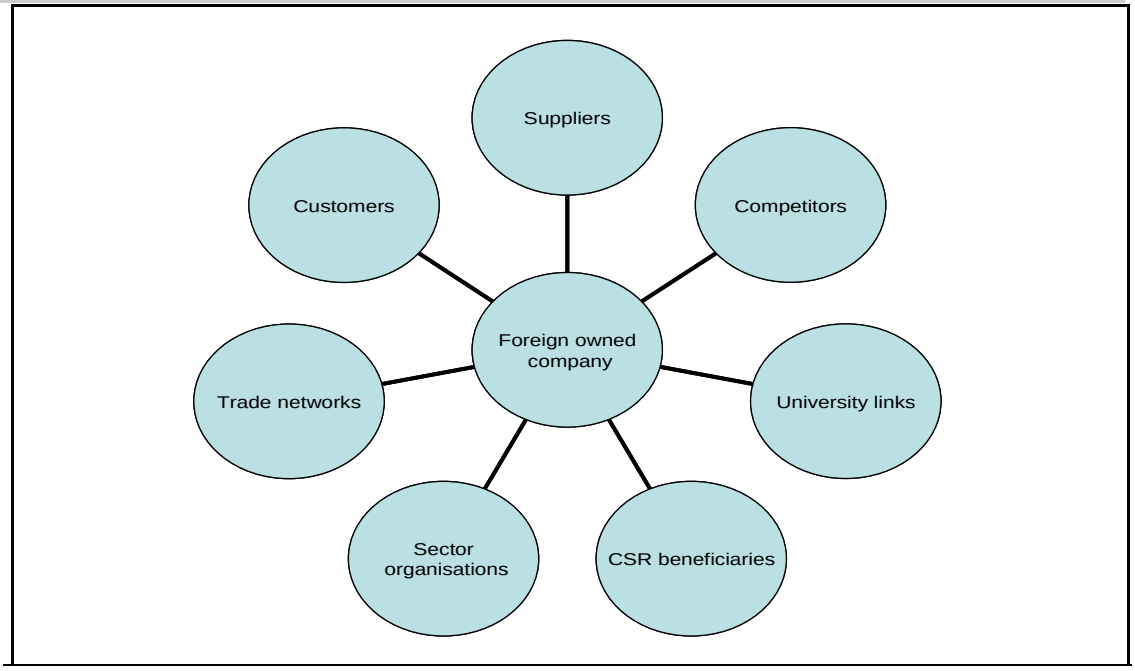
2.7 As the literature review in the next section points out, a frequently used way to assess spillover effects is to undertake econometric analysis of panel data. However, such an approach does not allow for an assessment of the impact of public sector support. Given that the aim of the current research was to evaluate the role of UKTI in providing support for inward investment activities, another approach was required.

2.8 We chose the use of an extended case study methodology as we believed this discursive approach allowed for a more in-depth investigation of the research topics and provided the flexibility to add further consultations as required. This was important as the use of case studies to examine the impact of inward investment was relatively novel in a developed country context. It therefore represented a 'journey of discovery' as a methodology and one aim was to identify areas that could be probed further through quantitative research at a later date. It also allowed us to gather qualitative firm level information, understand the transmission/spillover channels and capture dynamic impact (i.e. the changing nature of inward investment).

Assessing spillover effects

2.9 In order to arrive at a rounded assessment of spillover effects and understand possible transmission mechanisms for wider benefits, we aimed to make use of the case studies to consult not only the foreign investor companies but also a range of their key stakeholder contacts. Figure 2-2 demonstrates what we believed to be the potential spread of knowledge transfer.

Figure 2-2: Potential spillover recipients



Source: SQW

2.10 We used the consultations with the range of connected parties to examine the various potential forms of spillover identified through the literature review, as follows:

- **Vertical spillovers** – from supplier and customer linkages
- **Horizontal spillovers** – from migration of skilled workers to, and demonstration effects on, competitors and from membership of trade networks and sector organisations
- **Positive and negative spillovers** (depending on the motivation of the inward investors) – from links with the research base (as well as acquisition of R&D intensive domestic firms)
- **Improvements in absorptive capacity** – through capacity building/CSR activities in deprived areas

Examining channels of impact

2.11 The case study approach also allowed us to follow through the inward investment support process with a view to assessing the impact of the support at each stage. Hence we sought to review with each case study candidate how their internal decision making process works and how they treat inward investment projects. In some cases, this involved consultations with their global or European head office in addition to their main UK site and we also examined their interaction, as appropriate, with the UKTI Overseas Posts, the International Sales team in London and their relationship with the relevant (R)DA. This allowed us to capture attribution of support impact from more than one source within the firm.

Selection of case study candidates

2.12 The initial aim was to undertake six 'matched pairs' of case studies. In each case the two inward investor companies chosen would be as similar as possible in terms of selection criteria, the only key difference being that one received UKTI support and one did not. In this way we would be able to test the added value of UKTI support against the counterfactual.

2.13 We used the findings from our literature review to inform our selection of case studies. The key criteria were as follows:

- *Region in the UK* – in order to test absorptive capacity and see whether this altered depending on the R&D intensity of a variety of regions
- *Operational nature* – the aim was to concentrate on certain types, i.e. head quarters (which should have more control over supply chains), R&D units (a key indicator of R&D intensity), and a mix between services and manufacturing (to compare and contrast). We avoided pure sales and distribution outlets and call centres as having little to contribute in the form of spillovers.
- *Sector* – the emphasis was on choosing companies that fall into sectors that UKTI regards as key, i.e. financial services, ICT, life sciences, energy and creative industries.
- *Region of origin* – to include a spread in order to examine companies from countries at different levels of economic growth and technological advancement (which might have an effect on whether the spillovers generated were positive or negative in form).
- *Project type* – to include a mix of new investors and existing investors seeking to expand their operations in the UK. These would allow an examination of the two key areas of UKTI support.

Piloting

2.14 Given the innovative nature of the extended case study approach, we considered a pilot to be essential. This proved to be invaluable given the issues it highlighted.

2.15 We drew the case study companies from foreign investors entering/expanding in the UK in the year 2004-5 on the grounds that the impact of UKTI support would have had time to show through. For the purposes of the pilot, it was decided to undertake a matched pair of case studies in London (being the region with the highest number of FDIs).

2.16 In practice, of the 279 foreign companies investing/expanding in London in 2004-5, only 84 assisted and 34 unassisted met the selection criteria. Of these only 31 assisted and 18 unassisted produced a 'match'. We then sourced up to date contact details for the companies which left 21 assisted and 15 unassisted still operating in the London area. A letter was sent to each company followed by a series of telephone calls with a view to arranging a consultation. In the event two assisted companies and one unassisted company agreed to participate. The assisted companies were approached via their relationship managers at Think London (the investor development body for the London region).

2.17 The results of the two assisted case studies are discussed later in this report (the unassisted study yielded little of interest). However, the process learning points arising from the pilot were as follows:

- The process of sourcing contacts was challenging and time-consuming (due to the inaccessibility of customer records for 2004-5). It was therefore decided to use companies that invested/expanded in 2005-6 as these records had already been brought up to date for use in UKTI's inward investment monitoring process.
- Businesses tended not to respond to letters/calls from SQW but were much more open to approaches via their RDA contacts. It was therefore decided to work with the RDA investor development teams in arranging the interviews for the main fieldwork phase (with companies chosen by SQW).
- The businesses consulted in the pilot phase were small and this appeared to limit their impact in spillover terms. It was therefore decided to aim for companies with 10 or more employees in the main fieldwork phase in the hope that larger companies would generate more spillover benefits.
- The need to achieve an assisted/unassisted match severely limited the shortlist of companies to approach. It was therefore decided that whilst it would be useful to include some unassisted companies in the fieldwork, the requirement to find matched pairs would be de-emphasised.
- Once companies (both foreign investors and stakeholder contacts) had agreed to an interview, they were generally open and responsive. However, they were very reluctant to answer questions regarding their financial position or the value of supply/customer contracts. This made quantification of benefits very difficult and highlighted a key problem inherent in attempting to put a value on spillovers.
- Finally, we found that even where we were able to secure interviews with firms, it was sometimes difficult to get them to provide contacts and permission for us to contact suppliers, customers and especially competitors. In future, agreeing that they are willing to do this *before* the initial interview would help the process (although it may make it more difficult to find participants).

Main fieldwork

2.18 Taking the process points on board, 10 further case studies were conducted. The sample was drawn from FDIs either new to or expanding in the UK in 2005-6. A total of 145 assisted and 48 non-assisted companies met the selection criteria. As proposed at the end of the pilot, larger companies (10+ employees) were targeted on the assumption that they would have had more impact. In approaching the companies we enlisted the support of the RDA investor development teams which made the process much more straightforward. Although the aim was to find assisted/unassisted pairs in terms of region/sector, in practice these proved hard to achieve.

3: Literature review and development of research propositions

Purpose of the review

3.1 This section of the report presents the findings of a literature and wider review of policy, strategic and academic documentation on the role, nature and importance of foreign direct investment and inward investment, and the rationale for public sector intervention.

3.2 There were three primary objectives in undertaking this exercise:

- Update and where possible build on the review of the evidence on the relative benefits of inward investment reported in DTI Economics Paper 18
- Derive key research propositions to be tested via case studies
- Influence the method of designing, conducting and analysing the case studies.

3.3 The discussion below presents the key strands that the literature tends to focus on. It also identifies the key variables of interest and emerging research issues from this literature and reviews the implications of this for the design and conduct of our case studies.

Benefits from Inward Investment

3.4 Inward investment is often viewed as a significant source of productivity and economic growth (NIESR, 2002 for example). FDI has direct benefits in terms of employment and value added. Foreign-owned businesses accounted for around 20% of UK jobs in production sectors, and 9% of service sector jobs (excluding financial services), and around 24% of UK value-added over the period 1990 to 1997 (DTI, 2006). Inward Investment also generates positive externalities in the form of productivity spillovers which tend to support the rationale for public sector intervention in inward investment (UKTI, 2006).

3.5 UKTI (2006) recently conducted a comprehensive review of the evidence on the relative benefits from trade and investment and concluded that these are large and could come through different channels:

- **Direct and indirect productivity effects on UK firms** – multinationals tend to have higher than average productivity (Girma and Gorg, 2007) and as they increase their share in UK output, average productivity is enhanced. In addition, domestic firms experience increased access to new ideas and technologies, either through direct contacts with inward investors, or indirectly through knowledge spillovers
- **Competition effects** – Foreign firms compete with domestic ones for market share as well as resource inputs such as capital and labour, and 'raise the game' by bringing in superior management and marketing techniques and skills

- **Innovation effects** – firms that invest in the UK tend to be more R&D intensive, but often only in their home country; innovation effects are materialised when foreign firms are able to exploit key knowledge networks.

3.6 Despite the potential for positive productivity spillovers from inward investment, the evidence on the nature and extent of such effects is mixed. Some academics attribute the negative spillovers observed in studies to the tendency of multinationals to compete with domestic firms and a 'market stealing' effect. However, this is a rather simplistic suggestion and requires further investigation into the mechanisms by which productivity benefits can be realised from inward investment, and taking into account the determinants and motivations for inward investment at firm, industry and national level.

The nature of spillover effects

3.7 Productivity spillovers tend to work through a number of **channels** (Girma et al 2007, Gorg and Greenaway, 2004). Gorg and Greenaway (2004) use theoretical literature to identify four such channels through which spillovers might boost productivity in the host country as a result of foreign direct investment.

Table 3-1: Potential channels for spillovers from FDI

Channels	Details
Imitation	Adoption of new production methods and management practices
Skills Acquisition	Increased productivity of complementary labour and tacit knowledge
Competition	Reduction in x-inefficiency, faster adoption of new technology
Exports	Scale economies and exposure to technology frontier

Source: Gorg and Greenaway (2004)

3.8 A relatively small body of literature also examines the impact of inward investment on factors of production, and specifically the **demand for labour,** both skilled and unskilled (Taylor and Driffield, 2005 for example). Foreign entry influences wages directly and tends to make different factor demands for labour in comparison to domestic firms. There could be a further impact upon labour demand that takes place through a learning process where technological advantages from foreign firms are transferred to domestic firms, affecting skills levels of workers in such firms. Assuming that technological advancements favour skilled labour, and the host country lags behind the foreign firm's country of origin in technology, the demand for skilled labour could increase relative to unskilled labour. See later sections for more discussion on the effects of inward investment on labour.

3.9 Spillovers tend to rely on the **nature and type of linkages** that foreign firms make with domestic firms. There are inter-industry spillovers where domestic firms benefit from foreign presence in the same industry as theirs, leading to *horizontal spillovers*. These effects take place through migration of skilled workers, competition effects and demonstration effects. On the other hand, there may be *vertical spillovers* from foreign firms to industries or sectors other than their own. These effects come through as a result of buyer-supplier and customer linkages.

3.10 While the theoretical literature suggests many mechanisms through which FDI can have a positive impact on firm and industry productivity, empirical studies give mixed results. To a certain extent this variation reflects methodological and data coverage differences, but may also indicate systematic differences due to the mode and purpose of foreign entry, and domestic industry characteristics. In fact, Gorg and Greenaway (2002) concluded that "although theory can identify a range of possible spillover channels, robust empirical support for positive spillovers is hard to find."

3.11 For instance, the mixed results from a range of econometric firm level panel studies have been attributed by some academics to the importance of *both vertical and horizontal linkages*, an aspect that is often untested in such studies (Blalock and Gertler, 2003 for example). Moreover, it cannot be assumed that FDI benefits all domestic firms equally; it may depend on the *absorptive capacity* of domestic firms, along with other characteristics such as location and sector. Harris and Li (2008) concluded that absorptive capacity was a key feature in export oriented firms, along with undertaking of R&D activities and establishment size.

3.12 *FDI is seldom homogenous* and may differ by the type of investment (greenfield investment or mergers and acquisitions), the degree of ownership, and source country. For example, Javorcik and Spatareanu (2007) found positive horizontal spillovers from fully owned foreign firms but not from partially owned affiliates in their firm level analysis for Romania. The opposite was true for vertical spillovers.

3.13 Girma et al (2007) considered all these factors in their panel data analysis for UK manufacturing industries from 1992 to 1999, and allowed for FDI effects to be differentiated between domestic exporters and non-exporters. The authors found evidence of significant horizontal and vertical spillovers from export-oriented multinationals to domestic exporters but not to non-exporters, with the scale of effect improving with exporters' absorptive capacity. The authors conclude from these results that exporters are better able to take advantage to superior technology available from foreign firms and enhance their productivity. The study however finds negative spillover effects for domestic suppliers as a result of export-oriented FDI; an opposite effect is observed for domestic market oriented foreign firms. Lack of data disallowed the authors to investigate these effects further, but nevertheless highlighted the importance of backward and forward vertical linkages in realising productivity spillovers from FDI.

3.14 The direction of this vertical linkage may also be important and could have implications for the levels of spillovers from FDI. Driffield et al (2002) found, in their study of UK manufacturing firms that it was where domestic firms purchase from industries with higher levels of FDI that domestic productivity gains are most pronounced. By contrast, where domestic firms act as suppliers to the foreign-owned manufacturing sector, the evidence of externalities is weaker. The potential explanation is that larger multinational firms are perhaps able to appropriate the gains from any increases in productivity within their domestically owned supplier set.

3.15 Driffield et al (2005) found a positive impact of inward FDI on demand for *skilled labour* only, and that this rises when the investor has some technology advantage and no labour cost advantage. Demand for unskilled labour takes place when inward investors have intentions to source technology from the UK and wish to take advantage of low labour costs compared to

their home countries. However earlier research on the impact of FDI on manufacturing in the UK (Bailey and Driffield, 2002) found that inward investment actually decreases the demand for unskilled labour.

3.16 The empirical research on the implications for domestic investment by FDI (Driffield and Hughes, 2003) found that at an aggregate level inward investment to the UK in the manufacturing sector stimulated domestic investment. However, at a regional and sector level the positive findings are considerably more complex with certain 'peripheral' regions actually experiencing a 'crowding out' of domestic investment as a result of FDI, i.e. a relative reduction in investment by domestic firms in some regions due to a dominant presence of a foreign firm.

3.17 The *regional and spatial dimensions of spillovers* are also considered to be a significant factor. Spatial concentrations of high technology and R&D intensive firms increase the likelihood of knowledge spillovers to the region by determining future inward investment, and there is evidence to suggest that foreign multinationals tend to consider these factors when making location decisions. For example, Devereux et al (2003) found that regional industrial structure affects the location of new entrants, with firms in more agglomerated industries locating new plants near to others in the same industry. Further, new foreign-owned plants often choose to locate near to other foreign owned plants within the same industry.

3.18 Driffield and Munday (2001) examine the relationship between comparative advantage of UK industries and new inward investment in these industries, and find that the *spatial agglomeration* of industries are significant determinants of comparative advantage, which in turn encourage inward investment along with other industry specific characteristics.

3.19 Girma and Wakelin (2002) found evidence of positive spillovers from FDI in the same region and sector as domestic firms in the UK but results were significant only for firms that had a low technology gap compared to foreign firms. Results like these have led academics to question the validity of using inward investment as a lever for reducing inter-regional disparities, based on the evidence that spillovers are more likely to be observed in regions with relatively higher R&D intensive and productive domestic firms.

3.20 This regional dimension of inward investment focuses on the extent to which any spillovers are found to be cross-regional or limited to the area of investment. A number of studies across a range of factors (see Driffield, 2004; Girma and Wakelin, 2000) suggest that in the main spill-over effects from FDI are limited to the particular region in which the investment is based. Although this may be expected it has important implications for the potential benefit of FDI to those regions that may have firms less well suited to benefiting from FDI owing to the importance of absorptive capacity discussed above.

3.21 There is some, but limited evidence that suggests that regional and spatial policies matter. Gripaios et al (1997) conducted case studies of Bristol, Cardiff and Plymouth to investigate the role of inward investment in urban economic development. The authors concluded that whilst location and policy influences resulted in Cardiff and Plymouth attracting 'production only' facilities, Bristol was more successful in attracting high-grade manufacturing and financial and IT services firms, potentially due to more rounded regional development policies and public sector investments.

3.22 Driffield and Girma (2003) discuss the literature on *wage spillovers* that suggest that FDI may include the direct effect that investment has on demand in the labour market owing to increased output in the economy and the likely impact on domestic firms of the inflow of new technology assumed to accompany FDI. However, more widely the literature suggests that as foreign firms pay higher wages than domestic firms this may then lead to a 'bidding up' of domestic wages. This foreign wage differential may also act on the supply of labour to the domestic sector, as workers observe higher wages on offer in foreign owned firms.

3.23 Recent empirical research in the manufacturing and electronics sectors suggests that wage spillovers may indeed result from inward investment as it generates wage increases in the domestic sector (see Driffield and Taylor, 2006 and Driffield and Girma, 2003). However, this research provided two important conclusions:

- First, that wage spillovers are far greater for skilled as opposed to unskilled labour.
- Second, wage spillovers from inward investment are felt primarily within regions and industries rather than across them. Though some evidence of inter-industry spillovers was found in manufacturing, this was confined to skilled labour only.

The direction of spillover effects

3.24 The relative impact of FDI is often assessed against the traditional hypothesis that foreign firms that are motivated by 'ownership' advantages by way of technology and management expertise will invest in FDI which will then be an important mechanism for transferring technology to firms in the host country in question.

3.25 However, emerging theory and evidence is beginning to suggest that it may be naïve to assume that positive externalities from inward investment flow only from foreign firms to host country firms. In fact, the motivation to invest in FDI may be related to the foreign firm's desire to 'source technology' from the host country, resulting in 'reverse spillover' effects from domestic to foreign firms. Indeed, a survey of transnational companies that had or intended to invest in the UK found that the key determinants of FDI included 'resource seeking'[4] by investors looking to find particular resources, technologies and production methods in the host economy (Whyman and Bainbridge, 2006). There is little evidence to suggest that resource seeking behaviour tends to be displayed by firms from developing countries more when entering more developed nations.

3.26 Using a large panel of UK industries, Driffield and Love (2003) found evidence that investment by the domestic manufacturing sector generated productivity growth in the foreign sector, but this was restricted to R&D intensive sectors. Such effects tended to be greater where the spatial concentration of industry was greater, suggesting that the scope for technology sourcing could be limited to specific regions only. The authors admit that whilst these results are in no way linked to the motivation of FDI, they suggest that the mechanism by which technology sourcing could lead to productivity enhancements for foreign firms can exist in practice.

[4] Note that this is not necessarily related to the origin of FDI, i.e. from developed to developing country.

3.27 Griffith et al (2004), found evidence for the existence of such knowledge spillovers associated with technology sourcing benefiting foreign investors through researching the productivity of UK manufacturing firms investing in the US. They found that UK firms which had relatively more of their inventive activity located in the US, benefited disproportionately from the growth in US R&D. In total, UK Total Factor Productivity (TFP) in manufacturing would have been at least 5% lower in 2000 (about $14bn) in the absence of the US R&D growth in the 1990s. The benefits to host firms are found to be greatest when they have 'most to learn' from the host economy in which they are investing.

3.28 Some spillover effects can be negative too; the hypothesis that foreign firms could reduce the productivity of domestic firms through competition or 'market stealing' effects is suggested in several papers reviewed by Gorg and Greenway (2004). This happens because multinationals tend to have lower marginal costs than their domestic counterparts, allowing them to take demand away from domestic firms. However, this argument is inconsistent with the positive spillovers argument that tends to identify competition as a key channel. Gorg and Greenway (2004) argue that perhaps this is a short-term phenomenon only; it may take time for domestic firms to learn from foreign firms, with the latter not willing to share their firm-specific advantages. Moreover, positive spillovers may only affect a subset of firms, thus not showing up in aggregate level studies.

Drivers of impact of Inward Investment

Motivations for firms to invest

3.29 The scale, extent and nature of impact from inward investment tends to be driven by a range of contextual factors, although they appear to form disparate strands of literature that have not been coherently and systematically brought together in one framework as yet. This could be attributed to the origins of research on the two fundamental questions for research in inward investment – the determinants of FDI and what effects it has on host country firms, sectors and economies. While the former is found in international business and management literature, the latter has mainly been investigated in economics using econometric studies of the externality effects of FDI on productivity. These studies have often suffered from misspecification errors and missing variables that relate to the motivations of foreign firms to invest.

3.30 The 'ownership' advantage theory rests on the assumption of technological superiority for foreign firms; where a firm has this type of advantage over host country firms, it will invest in the country to exploit economies of scale. However, more recent theory and evidence has tended to focus on the 'technology sourcing' motivation, i.e. the desire to access and transfer technology that is available in a host country. Indeed a 1999 study by Pearce concluded that multinationals are increasingly locating to areas with centres of research and development.

3.31 Coupled with technology related motivations is the locational advantage motivation. As mentioned earlier, firms influence factor demand and prices in the domestic economy when investing, and could generate competition and positive wage spillover effects. But they also tend to consider the relative labour costs in making their choices on location for their investments and the size of the market into which they are moving. The results of a survey of

multinational firms investing in the UK in Whyman and Bainbridge (2006) provides the following as the five key determinants of FDI, all based on location:

- the size of national market
- a flexible labour market
- the growth rate of national market
- a stable and favourable political climate
- the quality of infrastructure.

3.32 Driffield and Love (2007) attempted to link the two strands of literature on FDI motivation and host economy productivity effects by developing a taxonomy of motivations for FDI, bringing together motivations influenced by technology and factor cost differences. Technology is measured by R&D intensity and factor costs are measured in terms of unit labour costs.

Table 3-2: A taxonomy of motivations for FDI

	Unit Labour Cost host < Unit Labour Cost source	**Unit Labour Cost host > Unit Labour Cost source**
RDI host > RDI source	Technology sourcing/locational advantage (1)	Technology sourcing (2)
RDI host < RDI source	Ownership advantage/efficiency seeking (3)	Ownership advantage (4)

Source: Driffield and Love (2007)

3.33 Thus the quadrants on the top row have the technology sourcing element but only the first column implies an additional advantage of lower costs. Quadrant 2 is technology exploiting, but column 3 implies an additional cost advantage that can lead to efficiency seeking motivations. The authors admit that the unit labour costs are not the only possible locational advantage that foreign firms could consider, and there may be others such as regional agglomeration and skills levels of workers.

3.34 Nevertheless the authors find in their empirical research that different types of FDI generate different spillover effects and the UK gains significantly only when firms are motivated by a strong technology ownership advantage. Inward investment that is motivated by technology sourcing considerations leads to no spillovers.

Other contextual factors of interest

3.35 Our review of the recent literature found other contextual factors that ought to be taken into consideration when assessing the potential impact of inward investment on domestic firms and economies. We believe that these factors will also add considerable value in terms of strengthening the economic rationale for offering public sector support to inward investors and domestic firms. These variables, along with those related to motivations for inward investment, should shape the key research questions for the evaluation and more specifically the case studies, and help influence case study design and methodology.

3.36 The key variables of interest and consideration are:

- **Country, location and regional characteristics –** host country technological levels (OECD, 2002), regional R&D, regional levels of employment and investment, presence of exporters, sectoral differences, presence of clusters, availability and supply of skilled labour

- **Spatial agglomeration –** This is usually measured (see Driffield and Monday 2001) at the industry level by converting industry gross value added into location quotients for different regions, and R&D spending at sector level

- **Type and extent of linkages between foreign and domestic firms** – horizontal and vertical linkages and the relationship between inward investors and pre-existing clusters; Driffield et al (2002) recommended that spillover effects can be further investigated at a disaggregated level within 'identifiable clusters of industry activity', and assess the externalities within and between UK regions. Further, within vertical linkages the direction of the relationship between domestic and foreign owned firms i.e. buying from or selling-to

- **Characteristics of domestic firms –** vis a vis R&D intensity, absorptive capacity and export orientation and geographic proximity to multinationals (Gorg and Greenaway, 2004) and technological sophistication (Aghion et al, 2007)

- **Heterogeneity in inward investment type** – ownership characteristics, form of entry (DTI Economics Paper 18), corporate governance appear to produce different spillover effects (Driffield and Love 2007). Levels of re-investment by foreign-owned firms and the extent to which this increases foreign-owned embeddedness in the host economy (Wren and Jones, unpublished)

- **Geographic source of FDI –** though many of the econometric studies are not able to disaggregate the source of the investment as a variable, wider evidence suggests that productivity and wages in particular may be dependent upon the source of the investment (for example see Griffith and Simpson, 2001 on the wage and productivity differences between Japanese, North American and 'Other' foreign owned manufacturing firms in the UK)

- **The role of public policy** – A vast majority of the academic literature that focuses on understanding the effects of FDI is policy neutral. There is a small body of literature, mostly relevant to developing nations and taking a development perspective to trade and investment, that explores the growing role of the public sector in promoting FDI and creating conducive host country environments (Kumar, 2003). Variables of regional and sectoral characteristics in modelling impact of inward investment may need to be further unpacked to include the role of public policy in influencing motivations, formation of linkages, and generating knowledge and productivity spillovers. Deveraux et al (2003) for example, suggest that whilst regional grants are effective in inducing firms to locate in particular areas to a limited degree, a further effect may be increasing the probability that subsequent new plants will locate there.

Methodological issues and limitations

3.37 One of the most common approaches to estimating the impact of inward investment has been the use of growth accounting models to assess whether foreign presence in a given industry is associated with higher labour productivity or total factor productivity growth in domestic firms at a sector specific or economy level.

3.38 Studies in the 70s and 80s tended to use industry-level cross-sectional data and were unable to distinguish between positive spillover effects of foreign entry and the tendency for MNCs to locate in high productivity regions and industries due to high levels of aggregation and absence of time-series data. Later studies began to adopt a panel data approach but a majority of these continued to use industry-level data.

3.39 However, once potential endogeneity and selection bias was controlled for, the largely positive productivity effects of the earlier studies could not hold, and results were mixed. Gorg and Greenaway (2004) found only seven studies in their review of literature on the impact of FDI that used appropriate data and estimation techniques and reported positive evidence on spillovers. Academics have attributed this to several factors – the inherent difficulty in measuring productivity, problems in establishing the extent and direction of causality, and issues with missing variables and misspecification of models.

3.40 Our review has also found that a majority of the econometric studies involve the manufacturing sector, although there is some recent evidence that there are significant differences between the FDI location behaviour of MNCs dealing with the provision of tangible goods from those dealing with the provision of non tangible goods (Driffield and Taylor, unpublished). Data on the manufacturing sector is relatively easy to access but the downside of using this data, especially when it tends to stretch back to the early 1980s, is that it fails to capture the recent industrial restructuring and changing economic and technological environments that has taken place in the UK and other Western economies, and more crucially, the growing relative importance of services sectors.

3.41 The last decade has seen some research (Driffield and Munday, 2001, Driffield et al, 2002, Gorg and Greenway, 2004) that has attempted to address previously missing variables such as the channels through which spillovers materialise (vertical and horizontal linkages), and a more systematic treatment of host country environments such as regional characteristics and spatial agglomeration, mode and purpose of entry, and industry and firm characteristics. However, such treatment is relatively recent and needs further investigation in terms of the role of the public sector in targeting interventions better.

3.42 There is little use of case studies as an empirical methodology for studying the effects of inward investment and where they exist they have tended to focus on firms in developing countries with some selection bias in terms of studying successful foreign entry only.

3.43 A substantive point to make with regard to the economics literature is that much of the literature does not intend to, or fails to quantify in real terms, the economic benefit of spillover effects as such. Use of new growth theory models and a policy neutral approach means that changes in productivity and wages are observed and reported at various levels of aggregation, but very few studies attempt to evaluate the costs and benefit of inward

investment. Evaluation studies are often restricted to trade and investment policies of developing nations only, as evident in research conducted by the likes of UNCTAD (2001) and OECD (2002).

Implications for case study methodology

3.44 The findings from our review offered some valuable lessons in terms of designing and conducting case studies as part of this evaluation.

3.45 Firstly, the criteria for selecting case studies needed to include, besides the type of project/investment and regional spread, other variables such as the relative presence of manufacturing and service sectors in regions, R&D intensity of regions and location quotients by sector. In addition, it was worth considering a representative spread of projects originating from a range of countries at different levels of economic growth and technological advancement. Also, where possible, it was important to ensure that there was a representative sample of both manufacturing and service sector inward investments were selected.

3.46 We were aware that the evaluation case studies would collate and analyse cross-sectional data and evidence, and hence might essentially ignore any dynamic effects of inward investment. Most academics (Girma et al, 2007 and Gorg and Greenway, 2004 for example) agree that the most appropriate methodology for assessing spillover effects is by use of firm-level panel data. Indeed, firms in the case studies might tell us that it was too early to assess the impact on their activities of inward investment supported by UKTI. To counter this aspect, it was necessary to select projects according to their 'age', i.e. how long they have been in existence in the UK.

3.47 In designing the topic guides for case studies, we needed to ensure that we unpacked the concept and types of spillovers on domestic firms more closely and explored, in a systematic fashion, the mechanisms by which positive (and negative) effects can work, the linkages between investor and domestic firms, and the role they play in determining behavioural change for both types of firms.

3.48 It was also be important to understand, identify and analyse the channels through which UKTI interventions feed through impact – starting from influencing investment decisions of foreign firms, and types of foreign investments, to addressing key barriers and creating information, knowledge and business networks and linkages, and the ways in which UKTI works with specific regional partners to influence positive impact of inward investment.

Research propositions

3.49 The literature review therefore highlighted a number of research questions which we wished to examine through the case studies. These were:

- What motivates and drives a firm's decision to invest internationally?
- What drives a firm's location decisions vis-à-vis inward investment?

- What is the extent and nature of the role of public policy in the host country that influences motivation and location decisions? In the case of the UK, to what extent have those decisions been influenced by UKTI's activities?
- What are the nature and extent of horizontal and vertical linkages that a foreign firm has developed with domestic firms? Are these relationships restricted to specific geographical boundaries?
- What are the characteristics of domestic firms that form linkages with foreign firms in terms of R&D intensity, export intensity, human capital?
- What role has UKTI played in initiating and establishing such linkages?
- What is the nature and extent of impact on domestic firms that have close proximity to inward investors in terms of factors of production (capital, technology) and human capital investment) and profitability (sales, turnover)?
- Does impact differ significantly depending on differences in the source and type of inward investment?
- Does impact differ significantly depending on the motivation and location decisions of inward investors?
- To what extent has UKTI policy influenced differences in the source and type of inward investment?

Research tools

3.50 In order to examine the research questions, we developed a set of topic guides. A separate topic guide was devised for the foreign investor company and each category of stakeholder (i.e. suppliers, customers, competitors, research base and networks). Copies of these topic guides are attached in Annex N.

4: Case Study overview

Introduction

4.1 This chapter sets out some of the context for the case studies that have been used, their motivation for investment, market interactions with suppliers, customers, competitors and networks, their future plans and innovation and R&D activities. The set of 12 case studies represents a very varied cross-section of FDI businesses. They come from different regions of the UK, are in number of sectors and vary in number of employees from three to eight hundred.

Company background

4.2 Table 4-1 sets out the 12 case studies, the region they have invested in, the number of employees, whether or not they were assisted by UKTI and the origin of the parent company. There are four manufacturers; pet food, glass, machine tools and industrial bearings. There are two sales support operations of quite different scales, one of which is a leading global provider of telecoms equipment and the other is a software sales operation. One business distributes parts for a major Korean car manufacturer. There is a major global engineering company, an Indian investment bank, a biotech research firm, a web traffic monitoring business and an ad tracking company.

Table 4-1: Case study businesses

Firm	Activity	Region	Employees	UKTI assist?	New, relocation or expansion	Origin
A	Glass manufacturer	NW	188	Y	Expansion	Japan
B	Software sales	E of E	7	Y	New	US
C	Engineering	NE	800	N	Expansion	Norway
D	Internet advertising	London	4	Y	New	India
E	Specialist pet food manufacturer	SW	87	Y	Relocation/expansion	France
F	Bearings manufacturer	SW	185	Y	Expansion	Japan
G	Biotech research	NE	3	Y	New	Canada
H	Telecoms equipment	SE	300	Y	Relocation/expansion	China
I	Automotive parts distributor	WM	10	Y	Relocation/expansion	South Korea
J	Computerised machine tools	WM	560	N	Expansion	Japan

Firm	Activity	Region	Employees	UKTI assist?	New, relocation or expansion	Origin
K	Investment bank	London	2	Y	New	India
L	Ad-tracking	London	4	Y	New	Canada

Source: SQW case studies

4.3 Of the 12 cases included, seven already had a presence in the UK prior to 2005/6. These were usually smaller premises and the new investment was part of an expansion or relocation into new, larger facilities. These include some major investments in new plant:

- The glass manufacturer has invested in a new £30 million production plant which the firm claims safeguarded 170 jobs and created 15 new ones.
- The pet food firm relocated its UK operations to a new site in Somerset
- Starting from a small sales office in London in 2001 the Chinese telecoms firm has taken premises to accommodate 300 permanent staff and a further 200 global employees
- The engineering firm, received an investment of £35 million to refinance the operation, introduce new management and move to new premises
- The bearings manufacturer relocated its European HQ to its UK site which safeguarded the 185 jobs
- The car parts distributor has also made a major new investment of £22 million in improving its UK operations
- The machine tool manufacturer initially set up a sales office in the UK before starting to manufacture here. It has made a series of new investments in its plant in the West Midlands doubling size

4.4 The five newer investments are all considerably smaller (in terms of number of employees). They are:

- A US software sales and support operation for UK and Europe employing seven people which has taken small office in the East of England
- A small Indian web tracking firm that employs four people in London and provides support to a large parent company in telecoms and online advertising as well as selling services globally
- A Canadian life-science research laboratory employing three people and working on new product development at Newcastle University
- Part of an Indian Bank operating as a small investment banking business, providing investment services for firms in the UK and India
- A small Canadian advertisement tracking firm, with four employees, working in the publishing sector.

4.5 Although these 12 cases were largely identified randomly, it is too small a sample to be entirely representative. Even so it is noticeable that the large investments have all been made by firms that have had some existing presence in the UK and that the new investments are all considerably smaller.

4.6 It may be that having this first experience is a useful way of "testing" the business environment before committing to a major investment. This is the pattern that these cases suggest. The machine tool manufacturer, which is one the largest cases, highlights this pattern growing over a period of 25 years from a small sales office to a key manufacturer in the West Midlands. The Chinese telecoms investment is similar although manufacturing is carried out in China. It started with a small sales office and has expanded to support 300 domestic jobs.

4.7 The new investments are markedly smaller tending to be in service related activities including banking, internet advertising and software sales. The life-science research is an exception.

Motivation for international investment/ investment in the UK

4.8 The case study companies' motivation for international investment largely centred on the desire to enter new markets/find new customers for their products. In some cases this was because they had begun to outgrow their home market for their particular product. In other cases either the nature of the product required a manufacturing base overseas or the sales/after care related to the product needed to be undertaken in-country in the new market (i.e. simply exporting the product would not be sufficient).

4.9 Motivations for investment in the UK were relatively straightforward. For those that were already in the UK, their investment in expansion reflects their satisfaction with current productivity and access to markets. For the new entrants, the UK site was usually their main European operation. In almost all the cases the main motivation was meeting growing demand in UK and/or European markets rather than more advantageous production conditions. Seven of the 12 are exporters using the UK operation to sell into Europe.

4.10 For the expanding manufacturers, once the productivity of the operation had been demonstrated, the next most important requirements were access to land, transport and raw materials. The potential motivations for operating in the UK market range from exploiting technology or process advantage through to economies of scale. In several cases there were cost savings from expanding existing UK operations rather than setting up new plant elsewhere in Europe.

Table 4-2: Motivation for international investment /investment in the UK

Firm	Motivation for international investment	Motivation for investment in the UK
Glass manufacturer	Wanted to develop the international market for its new product. This new product was expensive and unsafe to transport to Europe and the US from Japan. Thus, it needed a European manufacturing site	Their existing UK location at a former ICI site had demonstrated high productivity, had good access to markets and nearby supplies of raw materials making it a more attractive option than constructing a new plant in elsewhere in Europe
Software sales	The company's volume of sales was outgrowing the capacity of its network of international sales partners. Hence it needed to establish an office outside the US	Wanted to introduce new products to the UK market and offer better after-sales support outside North America, leading to additional sales
Engineering	Wanted to increase its presence in the growing nuclear market. Considered closing its existing UK plant and moving its operations to the far east	Used its market position, existing knowledge of the UK and management strengths to transform a poorly managed and relatively unprofitable business into a far more profitable concern by focusing on its core activities. The firm was already in the UK
Internet advertising	Wished to market its products/services to the European market	Linked to the activities of their large Indian parent company. It is partly a vertical integration to support the parent but as a result allows economies of scale and provision of more competitive web services
Specialist pet food manufacturer	Wanted to expand sales of its specialist pet foods beyond its home market in France	Improving productivity through economies of scale, bringing together two operations in the UK on to one new site, improving processes and better management
Bearings manufacturer	Had outgrown its home market in Japan (where it has a high market share). Needed to expand internationally to maintain growth rates	Attracted by the UK's reputation in tribology and the distribution links into Europe
Biotech research	The international investment is a one-off stemming from a chance meeting with a leading academic in the field.	To make use of the university's (and one specific academic's) experience in the field. The university also offered good research facilities and the firm has received some public funding
Telecoms equipment	Wanted to win contracts in the world's major markets. In-country sales and after care support is an essential part of the package that needs to be offered to secure the contracts	To secure and support major contracts in the UK. This is a sales and support operation which exploits the firm's strong Chinese technology manufacture with competitive prices in the UK and European markets. English language was given as a motivation for the firm locating in the UK as was the perceived strength of the UK in this sector along with the perceived ease of registering IP.
Distributor of automotive parts	The company provides after sales part support for the major Korean car manufacturers. As such it needs to have a presence in the relevant world markets.	To support the sale of cars in the UK. Although the parts centre could have been located in Belgium, the site in the West Midlands offered better transport infrastructure making it easier to serve the rest of the UK and Ireland. The fact that Volkswagen also had its centre on the same site reassured the firm that this would work
Computerised machine tools	Too expensive and time consuming to service export markets from Japan. Hence the need to establish a manufacturing and sales presence in Europe.	UK offers good access to EU markets for the Japanese firm, high productivity and the firm has developed strong links within the West Midlands economy. The reputation of the region in manufacturing was one motivation in their initial decision to invest.

Firm	Motivation for international investment	Motivation for investment in the UK
Investment bank	Very keen to expand its investment banking operations beyond India. Considered a series of international locations.	Motivated by the success of its parent's banking operations in the UK and the opportunities it saw in forging links between the fast growing Indian economy and UK businesses
Ad-tracking	Wanted to expand the market for its new product into Europe. The need to demonstrate the product's benefits face to face requires a physical presence in target markets	Drawn by proximity to the London publishing market which it considers to be a big opportunity. The firm already operates similar models in the US, India and Canada. It already had experience of the UK market having set up a previous business there that was subsequently taken over by Reid Publishing

Source: SQW case studies

4.11 The following individual examples also show how participation at conferences, attracting international students and reputation in specific sectors (finance, telecoms, manufacturing) can play critical roles.

4.12 The small biotech subsidiary was set up in the North East as result of a chance meeting at an international conference with a Professor at Newcastle University. One of the reasons the Japanese bearings manufacturer located in the UK was because of the European Managing Director's training in the UK and strong relationship with senior management in Japan. A driver behind the software business locating in the UK was its existing links with the British military in the US.

4.13 The reputation of the UK and the effect of agglomeration can also be seen in a number of the case studies. The manufacturing investments were made partly because of the UK's reputation in certain fields; the investment banking firm came because of the global importance of the City of London; one of the reasons for choice of location of the car parts distribution centre was that competitors were also based on the same site; the ad-tracking firm was attracted to London by proximity to the publishing industry (its key customer), while the Chinese telecoms firm was attracted by the UK's reputation for having a strong and growing telecoms sector.

What did they bring

4.14 The investments did not all bring new technology or knowledge. Some were expansions to generate economies of scale that will have little impact beyond improvements to the firm's own productivity. Within the case examples we estimate that seven of these investments are led by technology based improvements. These firms are bringing or using new technologies which they expect to drive sales in the UK and European markets. Three of the examples relate to the introduction of new processes, i.e. business management of the engineering firm, new logistics (which includes use of new technology) for the distribution of car parts and the new business relationships that the Indian investment banking firm brings. The remaining two investments offer little new, but their expansion or relocation will improve productivity for these firms and their parents.

4.15 From a relatively small list of case studies it is useful to see how many relate to some new form of technology. The use of new technology (in processes or as a product) appears to be the main driver of these investments and their expectations of increasing sales and

4.16 productivity. From the perspective of the UK, there are then a number of potential benefits both directly through access to products that embody this new technology and potentially through sales. These benefits for the UK are examined in more detail in the following chapters.

Table 4-3: Key product or service improvements

Types of advantage	Example
New technology	US software company - new GPS-based software
	Japanese glass manufacturer - new glass compound
	Canadian life-science research – new diagnostic products
	Chinese telecoms - access to new telecoms equipment
	Japanese machine tool manufacturer – automation of manufacturing processes
	Canadian ad tracking firm – new advertising tracking tools
	Japanese bearings manufacture – manufacturing processes
Improved management processes	Norwegian engineering firm – business management and investment
	Korean car part distributor – new logistics systems
	Indian investment banking firm – new Indian business relationships
Scale economies	French pet food manufacture - amalgamation of existing pet food manufacturing sites
	Indian internet service provider – web advertising management tools to supporting parent and global sales

Source: SQW case studies

Summary

- Case study characteristics were very varied in terms of activity, number of employees, location within the UK and country of origin. Whilst too small a sample to be representative, they do provide a good range of examples of UKTI support
- The size of the case study companies (in terms of employee numbers) has grown in line with the time they have been established in the UK, in some cases over a considerable period of time. We examine in the following sections how size and level of embeddedness in the UK of FDIs has affected the level of benefits produced
- A common motivation for the case study companies to invest overseas was the desire to develop new markets for their products or services but where exporting alone would not suffice (due to the characteristics of the product or the need for hands-on sales and after care support)
- In terms of investing in the UK, the investments were all attracted by key characteristics, i.e. access to Europe, good workforce, demonstrably high productivity and an addressable domestic market. But there was often another factor involved, for example:
- a market cluster that they could contribute to or serve
- a previous link with the UK

- the UK's reputation in specific industrial/research fields

- In terms of technology, seven of the FDIs brought new technology with them with a view to exploiting an ownership advantage. A further three brought improved management processes. Thus the majority of the case study companies possessed qualities that could generate both direct and indirect (spillover) effects. These are now explored further.

5: Additionality of support

Introduction

5.1 Even if there are benefits generated by inward investment, it does not follow that it is necessary to use public resources to attract it. Whether or not there should be public sector intervention depends on the existence of market failures. In other words, are there particular reasons why the market will not operate effectively and efficiently? The market failure arguments and the rationale that underpins UKTI's intervention are examined in detail in the Relative Benefits study[5]. This concluded that "*there is evidence of market, network, and institutional failures which create barriers to both inward investment and exporting, giving rise to important roles for UKTI in both areas.*"

5.2 We do not believe that these 12 case studies here are sufficient to draw any conclusions on the efficacy of UKTI support more generally, but they do provide some insight into the ways in which support impacts on these firms. The overall impact is captured by UKTI's monitoring systems. Even so, the pattern of support reported here is helpful in refining the approach that UKTI takes to measuring its influence and ensuring that monitoring covers all the possible ways in which UKTI adds value.

5.3 One of the biggest challenges here is that the support comes not just from UKTI but also through the Regional Development Agencies. In these case studies we found that both had been influential to varying degrees.

5.4 Overall, investors tended to be more aware of the RDAs' role than that of UKTI. In a lot of cases any initial UKTI influence would have happened in the parent company's own country and with a different set of decision makers than those who are now managing the UK operation. Furthermore, these cases are now several years old and interviewees can have difficulty recalling the details of the decision making process leading up to their investment. The case study interviews were conducted with senior management who were in most cases not part of the original decision making process.

Findings

5.5 The main challenge in this section is to determine the roles that UKTI and the RDAs played in encouraging these investments. In the logic model in Chapter two we set out the main activities of UKTI support as providing specific information on key commercial considerations and comprehensive regional and local analysis, introductions to sector networks, helping build collaborative technology partnerships, providing 'aftercare' support, developing co-operation and operational guidelines. These activities are expected to result in encouraging foreign businesses to the UK and specifically to engage in further R&D activity in the UK. Ultimately this should result in impacts on UK productivity and its drivers.

[5] 2004-2005 study of the relative economic benefits of UK Trade & Investment support for trade and inward investment: final synthesis report, DTI Evaluation Report Series, 2006

5.6 Table 5-1 summarises the "additionality" of the support provided by UKTI to each of the case studies. The second column describes the type of support received and whether the firm undertakes R&D. The third column summarises the overall influence using four categories:

- **Reduced risk** – the support received reduced the perceived risk of making the investment and therefore made it more likely to happen than would have been the case without support
- **Timing** – the support enabled the investment and the project to happen more quickly than would have been the case without it. By starting sooner the benefits would be realised more quickly
- **Quality** – the support enhanced the quality of the investment. This means that the information or advice provided allowed the investor to make better informed decisions and this in turn will lead to a higher level of performance than would have been achieved otherwise
- **Influence on decision** – in some cases UKTI will have a direct influence on the decision to come to the UK. In one case here (the ad-tracking company), the firm reported that it had had "some influence".

5.7 Seven of the 12 already had a presence in the UK and in these cases we are interested in whether UKTI or the RDAs were influential in these expansion decisions. Two of the cases had not received UKTI support in 2005/06 but they had both been supported by their RDA, one substantially.

Table 5-1: UKTI and other assistance summary comments

Firm	UKTI and other assistance summary comments	Additionality
Glass manufacturer	*"UKTI did a good job encouraging the firm to expand in the UK"* - provided reassurance that if they experienced any problems they could rely on public support - but limited influence on their decision to invest - support also from RDA and local authority on planning issues - but disappointed that there was no financial assistance	Reduced risk of expansion investment
Software sales	Would be in UK anyway but UKTI helped identify appropriate premises. RDA then provided contacts and helped understanding of business environment, which has been useful	Small quality influence
Engineering	No UKTI assistance, but RDA support has been critical in remaining in the UK. RDA provided funds for new premises and helped develop the business case for the firm's operations in the UK. Helped safeguard 500 jobs and now added 300 more	Not assisted by UKTI (but major RDA support)
Internet advertising	Extensive use of support as previous experience in Singapore without support was poor. Assisted the firm by providing information about local markets, suppliers and customers, and help with relocating staff from India. UKTI helped address critical visa issues in relocating staff from India. RDA introduced them to an agent to help acquire data centres. Support considered "critical" although not on overall decision	Timing and quality of investment
Specialist pet food manufacturer	Management were unable to comment on UKTI support, but local authority has been "invaluable" in improving relationship with the local community. Without this support investment would have been less successful and less productive	Not known
Bearings manufacturer	Initial contact with UKTI through Japanese post, although decision to locate in the UK had already been made, helped progress investment more quickly. RDA is now providing support with planning issues. Consider that more funding should be available to encourage investment	Timing

Firm	UKTI and other assistance summary comments	Additionality
Biotech research	Initial meeting with UKTI and Canadian High Commission in London. Considered very useful in getting the right people together but not considered to be significant in decision to invest	Quality
Telecoms equipment	UKTI Chinese post - very helpful in getting visas for key staff - risk that without it process would have been too slow to meet customer requirements. Support from RDA to identify 200 potential locations and helped to build relationship with local government, information on employment law and local environment - Very impressed with support and process	Timing & Quality
Distributor of automotive parts	Very positive about support from UKTI and RDA. UKTI helped identify the West Midlands as a base and they met them a number of times - accelerated the investment process	Timing
Computerised machine tools	No involvement with UKTI initially but more recently worked with their R&D specialist and with AWM on R&D Tax credits. As an important regional firm, AWM also consult with them on strategic issues on manufacturing in the region	Not assisted by UKTI
Investment bank	"Support has been like having a friend in London" - independence of UKTI was valued highly given that other agents would have vested interests. Without support, investment would have taken much longer and potentially not have happened at all	Timing
Ad-tracking	Used UKTI to find a suitable location and was impressed by the standard and efficiency of the service. The availability of this office was the deciding factor in moving to the UK rather than Ireland. Think London has kept in touch with them since they arrived and helped with a search for a larger office last year. Highly satisfied with the support they have received from both sources.	Some influence on decision

Source: SQW case studies

5.8 No company attributed their original decision to come to the UK solely to UKTI involvement although the ad-tracking firm did report that their efficiency in finding such good accommodation was a crucial factor. While they were all positive about the experience, there were no cases where the firm believed they would not have come to the UK without UKTI. Instead, additionality was more frequently "partial". Overall the involvement of UKTI has helped investment to happen faster, reduced the risk that investors feel when assessing potential projects and influenced the quality of the project.

5.9 This raises further questions about the importance of these effects. Additionality is frequently measured simply in terms of how the intervention has impacted on the investment decision. In practice, the activities of both UKTI and the RDAs are more likely to impact on the performance of the investment. The support adds value by helping inward investment projects work as well as they can.

5.10 For example, delays in getting hold of visas for key staff, identifying appropriate sites or planning issues could mean that an opportunity was missed and that the performance of the project is poorer, or at worse abandoned. The firms themselves would not know this but it is likely that there is some risk. There are two examples where securing visas has been key. The Chinese telecoms firm received support from UKTI's Chinese post to fast track visas for key staff to work in the UK to support a major new office. Without UKTI support there would have been a serious danger of not meeting customer requirements and it could put the quality of their service and ultimately their contracts, at risk. The Indian web advertisement tracking tool firm had similar issues on a smaller scale where the key staff required help to get visas.

5.11 Another example is the Japanese glass firm which reported that although UKTI did not provide any direct support it had provided reassurance that if the company experienced problems with their investment (regulations, construction issues etc.) they could access support from government. Whilst this support was useful, the company indicated that it had a limited influence on their final decision to invest in UK. During the investment process, advice was also provided by NWDA and the local authority, particularly in relation to local planning issues.

5.12 A common form of support was help to identify appropriate regions and then, usually through the RDA, identifying premises within specific locations. This support was valued by investors, but did not influence their decision to invest in the UK. In these cases there is no obvious counterfactual, but it would be reasonable to assume that without this guidance less research would have been done and potentially poorer decisions on business location would be made, with a subsequent impact on performance.

5.13 The analysis above commented on the importance of helping investors build confidence in their new locations and that this can influence future decisions on expansion and contraction. Going a step further, it might be argued that UKTI provides an important first impression of the UK and its business environment. This impression and the subsequent support that is provided will shape investors views not only for this initial investment, but also when it makes decisions about expansion or contraction of its overseas interests.

5.14 It is interesting that in a number of the cases the firm commented favourably on the attention they received and the independence of the support. This builds confidence in the host country that they will be available to help if it is needed as in the example of the Japanese glass manufacturer. It may be that this professional and independent role acts as a form of reassurance, reducing the investors' perception of risk. The positive experience is likely to prove valuable in the medium term as some of these cases consider whether and where to expand their activities.

RDA support

5.15 In all the case studies the RDAs have been prominent in the support provided once the firm has decided to locate within the region. All the firms were very positive about their experience. In one case, the engineering firm attributed the fact that their 800 strong operation was in the UK at all was because of the assistance they received through provision of property and help with developing a viable business plan. In the West Midlands the machine tool manufacturer is being assisted by the RDA and UKTI to look at the opportunities of benefiting from R&D tax credits. The firm also contributes to the region's manufacturing strategy. The RDA has also been a key link with the Chinese telecom firm initially identifying 200 potential locations and helping to build the relationship with local government and providing information on employment law and local environment.

5.16 The glass firm is receiving support from the RDA on planning issues to help resolve difficulties with a large scale physical investment as is the bearings manufacturer. The US software firm felt that the main contribution was help in understanding the business environment, rather than any specific contacts. An RDA had also been very valuable in helping identify appropriate agents for acquiring data centres in the UK. Think London were

described as "like having a friend in London" and the Indian investment banking business reported that without the support the investment would have taken much longer and potentially not have happened at all.

5.17 The two areas where RDAs have provided most support have been in identification of sites signposting to local authorities on planning issues and in providing information on the business environment. In practical terms, understanding who does what within the region is one of the biggest challenges and this type of information has accelerated development, making the investments more profitable. The RDA is seen as the gateway into a range of public sector support including the examples of work on R&D tax credits and on planning. There were also examples of support through local authorities. In one case there were issues around pollution and working with the community to address the problems.

Other forms of impact

5.18 Other potential impacts of support include encouraging more R&D, more joint R&D with UK partners, developing links with UK universities, greater use of UK-based suppliers, more capital expenditure at the site, additional training, or changing the composition of the workforce.

5.19 Within our case studies we found just one example where UKTI's involvement had led to additional R&D. Five of the 12 cases undertake R&D in the UK. One firm was working with UKTI and the RDA to identify ways to take advantage of R&D tax credits, which would contribute directly to the objective of influencing R&D activity.

5.20 In another case the R&D links were reported to have been developed entirely independently. In the third case, the life-science research firm, there has been separate financial support for R&D including a grant for £200,000 from the RDA and also funding through a "proof of concept" programme. Although the RDA may have been made aware of the firm's investment through UKTI, this support was considered to be separate from the UKTI network. In the final case, R&D is related to nuclear energy development and was also considered independent of UKTI. The final example, a glass manufacturer carries out its own R&D and did not consider UKTI to have influenced this.

5.21 There were no cases where there had been influence on the use of local suppliers or additional training. Cases where UKTI has been able to secure visas more quickly for overseas employees would change the composition of the workforce, but there was no evidence that UKTI's involvement had changed the planned shape of the investment.

5.22 Generally, we found that encouragement to engage in networks came from the RDAs *once the firm was operating*. Given that the RDAs support a number of networks, particularly in manufacturing and engineering, these firms are likely to be valuable contributors and are potentially a route to the spillover effects discussed later.

Summary

5.23 Of the 10 case studies that had received assistance

- one considered that the support had made a direct impact on the decision to invest

- five reported that the support had made the investment happen more quickly
- four indicated that UKTI had influenced the quality of the investment (through fast tracking visas, linking the firm to the "right" people)
- two considered the support to have reduced the risk of their investment

5.24 The summary above suggests a number of points:

- There was little evidence that the UKTI support was critical in the initial decisions to invest in the UK. This was usually made by the parent company independently.
- There was evidence in most cases that the support either accelerated investment, reduced the risk or improved the quality of the investment
- In relation to timing, although it is not possible to prove, there is a risk that if the investments had been delayed, they could have been abandoned altogether or there could at least have been an adverse impact on performance.
- The quality benefits are important not so much in the short term, but in the longer term where either encouraging expansion or retention of investment will benefit from the relationship that has been developed.
- Within our case studies we found one example where UKTI's involvement has led to additional R&D, but none where there has been influence on use of local suppliers or additional training. Cases where UKTI has been able to secure visas more quickly for overseas employees would change the composition of the workforce.

Learning

5.25 While there are similarities in the case study findings in that much of the additionality of support relates to timing and quality, we did not find as much influence from either UKTI or the RDAs on the other areas of potential impact compared with that identified by UKTI's monitoring systems. This may be because within their responses to the monitoring survey firms are including support received from the RDAs. This might be interesting to follow up in future surveys.

5.26 Another area where the survey might look more closely would be around the claims of timing and quality additionality. Where it has brought forward projects, it could ask whether there would have been any risk of the project not taking place if it was likely to take longer. It may also be useful to develop an understanding of the benefits of the customer relationship role in building confidence in the firm's investment. At times of weaker economic growth, retaining foreign investment becomes as, if not more, important than attracting new investment.

5.27 Assessing the success of UKTI's role depends on the smooth transition into the RDA's support network and, as a minimum, the RDA maintaining contact with the firm. The case studies provide several good practice examples. The engineering firm in the North East where RDA intervention safeguarded 500 jobs is one. Another is the work with the machine tool manufacturer in the West Midlands where there has been a long term relationship with the RDA. The life-science research firm received funding through several RDA backed sources and the large Chinese investor was also impressed with the interest that it received from both UKTI and the RDA.

6: Benefits framework

6.1 One of the most difficult aspects of understanding the impact of inward investment is categorising the types of benefits. In this report we have adopted a structure which best fits the types of case studies covered and also reflects the categories used in the academic literature. We have used three categories: firstly, direct effects which relate to the output, employment and productivity effects that the investment supports directly. The second category, innovation effects, relates to new, improved or better value products and services that lead to improvements in customers' productivity. The final category is spillover effects, the externalities that are caused by the inward investment but for which it is not compensated.

Direct effects

6.2 These are the direct effects of the investment on employment and output and can be considered in both gross and net terms depending on assumptions about levels of displacement. The direct effects also include the impact on foreign exchange earnings generated by exports.

6.3 There can also be a direct effect on productivity where inward investment leads to an expansion of an existing operation, takes over a domestic firm or where it replaces one through competitive pressure. These effects can be the result of improved technology, new processes, better management, economies of scale or market power that would not be available otherwise. A number of the case studies relate to expansions of existing operations in the UK which have led directly to improvements in productivity.

Innovation effects

6.4 Strictly speaking spillover effects should be externalities, benefits for which the inward investor is not compensated. In practice, studies quite often include the benefits of improved products or services to customers as a spillover although they are the result of trade. Equally some of the benefits that suppliers receive from selling to an inward investor could theoretically be priced into agreements. Consequently we have included "innovation effects" separately from spillovers. The innovation effects stem from the inward investment selling improved or cheaper goods or services which can lead to improved productivity or welfare among customers.

Spillover effects

6.5 The final category in the framework is spillovers. They can be horizontal, impacting within the industry, on competitors, networks and research organisations, or vertical, impacting on customers (downstream) or suppliers (upstream).

6.6 Spillover effects can come through a number of routes, and are the beneficial (or non-beneficial) effects of the inward investor's presence that are not taken into account in the market. For example, despite efforts to maintain a market advantage, knowledge or

technology can leak out from the inward investor to other firms that can take advantage of it. It can force up the quality and price competitiveness of competitors in the market, provide additional training that can result in a stronger labour pool from which other firms can benefit and contribute to agglomeration benefits for other firms, perhaps by attracting new services. Suppliers can benefit from the presence of inward investors where they help raise standards that can then be used to win other contracts.

UK and foreign-owned beneficiaries

6.7 In many of the case studies it was not always clear whether the beneficiaries of the inward investment were UK or foreign-owned and whether that mattered. On balance it is usually better for the UK that it is domestically-owned firms benefit because profits are more likely to retained in the UK, contributing to national income. The profits of foreign-owned firms will usually be repatriated. This becomes an issue when the case studies demonstrate how many of these sectors are dominated by foreign-owned firms.

6.8 In the analysis we have indicated where the main beneficiaries are other foreign-owned firms. In the cases where the innovation effects were strong, the customers benefiting were for the most part UK-owned. In relation to spillover effects, where there were suppliers in the UK (usually in manufacturing) these were also UK owned.

6.9 However, most of the competitors tended to be foreign-owned, for example in the manufacturing, engineering, ad-tracking and telecoms cases. Where the inward investors were selling within the UK (and improving competition) in engineering, telecoms and software, the beneficiaries were found to be major UK-owned operations, including the public sector.

7: Direct effects

7.1 This section is divided into two parts. The first considers the direct output and employment in the firm and potential displacement in the rest of the sector. The second part of the chapter considers the productivity effects of the investment on the firm itself, where it is an expansion, and on the sector. In other words, does it directly increase average productivity in the sector excluding any spillover effects? These productivity benefits are often additional to the direct output and employment that is supported. For example, if inward investment introduces new technology to a poorly performing domestic plant, this will both safeguard output and employment that could be lost *and* increase productivity.

7.2 The direct effects on employment and output are those that take place within the firm. At one level most inward investment will safeguard or create jobs and GVA directly. There is however debate about how much of this represents *additional* economic activity as it is usually accepted that much of this would have taken place anyway, e.g. the activities of the inward investment firm make use of domestic labour that could have been employed elsewhere.

7.3 The question as to whether or not this is advantageous for the UK overall depends on how these resources are used and what the investor brings, for example, better management, sales networks, experience, organisation or technological advantages that then allows these resources to be employed more productively. Even where the investment directly displaces existing activity it may allow the host country to make better use of its resources. The extent of this displacement depends on the nature of the investment, its markets and the resources that it uses. Clearly each case will be different and the case studies allow some specific experiences to be analysed.

What does the literature say

7.4 The direct effects described here relate to the impact of the investment on the FDI's own performance where it is expanding and on its displacement effect on the rest of the sector. There are two aspects to this. The first is the direct increase in the demand for labour that inward investment creates and the associated output. The net effect of this largely depends on the scale of displacement from other firms in the sector. The second aspect is its direct contribution to productivity relative to others in the sector that it replaces.

7.5 Foreign owned businesses tend to have higher productivity than domestic firms (Girma and Gorg, 2007). The fact that they are investing in the UK suggests that they have some competitive advantage over the incumbents serving the host country (Gorg and Greenway, 2004). As they increase their share in UK output, average productivity is enhanced. The case study examples all show some competitive advantage (productivity, technology or both) that underpins their investment.

What is our experience?

7.6 The presence or scale of these direct benefits varies significantly case by case and Table 7-1 presents the main findings for each using the categories described above. There are some good examples which are discussed in more detail in the following paragraphs.

Table 7-1: Direct effects and displacement

Activity	Emp	Description	Displacement
Glass manufacturer	188	Major investment in the plant and introduction of new product has increased productivity and safeguarded jobs. Without this investment, production would have moved to a site outside the UK. Without the new product and access to the same global markets potential buyers may have found it hard to operate as productively. Without another buyer, resources would have had to be redeployed in other sectors but there may have been difficulties finding alternatives.	Medium
Software sales	7	Little product market displacement as this is considered a unique product, but some labour market displacement as it reduces the need for in-house programme development in client businesses	High
Engineering	800	Safeguarded 500 jobs and added 300 new ones. Without the investment the firm would have withdrawn from the market. Some of this activity would have been carried out by competitors in the UK and some lost to overseas firms. Some of the overseas metals trading activities would have been lost to the UK Financial investment was key here in retaining the operation in the UK, coupled with management re-organisation. Needed a large organisation to make this investment and maintain competitiveness. This was unlikely to come from a domestic-owned firm in this sector	Medium
Internet advertising	4	The activity itself is highly competitive and operates in a global market. Staff brought from India and therefore likely to represent additional output to the UK The new operation is partly to exploit the relationship with the parent business. As a result it will generate economies of scale	Low
Specialist pet food manufacturer	87	The original takeover of the UK business and subsequent relocation and expansion has improved productivity compared with the domestic operations. Without this investment it is likely that more market share would be lost to the major importers, potentially leading to closure of UK manufacture Given the location, it would have taken time for the labour market to absorb these jobs.	Low
Bearings manufacturer	185	Investment in improving productivity has safeguarded jobs. Without it the firm would have been unable to continue to operate in Europe. There are no immediate UK competitors that could take over the plant and work would be taken by overseas competitors instead. Domestic resources would have to be redeployed in other sectors	Low
Biotech research	3	Although the research investment is introducing new products not competing with other UK activity, the use of key academic staff is displacing from other research No immediate impact on productivity	Medium
Telecoms equipment	300	Given the demand for telecoms equipment in the UK it is likely that this would be met by a similar structure and jobs	High

Activity	Emp	Description	Displacement
		regardless of who was supplying it so direct net effect is probably neutral. It also uses highly qualified graduates who would be able to transfer skills into other productive activity relatively easily.	
Distributor of automotive parts	10	Without this investment we understand that the market would have been supplied from Belgium. The investment in the UK will improve the firm's own productivity in delivering parts with knock on benefits for customers. The investment represents additional demand in the UK, but without it the workforce might have found alternative employment.	Medium
Computerised machine tools	560	If the investment were not made in the UK, it would have been made elsewhere in Europe to service the European market. Competitors are from Korea, Japan, US and Germany so no product market displacement. The investment will directly improve productivity for the UK plant. Without it, the additional employment would have to be redeployed, potentially in less productive work. The extent to which this could be absorbed by the labour market depends on the skills and the local opportunities.	Medium
Investment bank	2	The investment has brought new people to the UK adding to the supply of resources. The business will work with an existing bank investment in the UK and there are some economies of scale, improving productivity and competitiveness.	Low
Ad-tracking	4	Directly competes with major international advertisement tracking business. Likely to transfer business from one foreign-owned business (in the UK) to another, so largely neutral direct effect. The improved product does not directly change productivity within the sector, but will lead to improvements for clients	High

Source: SQW case studies

7.7 There are 2,150 gross jobs supported in these 12 case studies. The question is how much of this can be attributed to the investment made by foreign-owned businesses and how much is simply displacing employment or economic activity elsewhere in the UK economy. As the table shows we have divided the case studies in terms of high, medium of low displacement.

7.8 An example of high displacement is the Chinese telecoms business. We understand that this market is dominated by international firms. Whoever won the major contracts with the UK customer would have to provide a similar level of support services and import the hardware. The other mainly displaced cases are the ad-tracking business which we know competes directly with another foreign-owned firm with employment in the UK, and the US software firm which directly reduces the need for programmers in client businesses. (The negative aspect of displacement will however, be offset by the greater productivity in the client business caused by the more efficient process).

7.9 The medium cases arise where there is less product market displacement but where the main labour resources *could* be used productively elsewhere if the investment had not been made. For example, the Norwegian engineering company carries out a number of contracts which would be taken by UK-based competitors, although there were also contracts that would have been lost to overseas contractors who would have undertaken the design and planning elements outside the UK. Product displacement is substantial but not 100%. Without the investment of the Norwegian parent, the key staff would have moved to the Far East and a

proportion of the remainder would have found employment on the UK contracts. Non-professional staff may have found it harder to find jobs locally.

7.10 The international distributor of Korean car parts is also interesting. The alternative to the new investment was for the firm to deliver the parts it is licensed to provide from a distribution centre in Belgium. As well as being less efficient, it would mean that there would be no employment (and GVA) associated with these activities within the UK. Instead, there would have been no capital investment (or associated construction). Given that the firm had the exclusive contract to distribute parts in the UK, the issue is whether the employment that was created would instead be used in other activities. As distribution of car parts is not a highly technical activity, it is likely that the staff could find other distribution jobs.

7.11 The extent of this form of displacement depends on views on the labour market and how efficiently it can adjust. There is a regional dimension to this. In some areas it will be harder to find jobs than in others, and there is a skills dimension in that people with different skills will more easily be able to transfer between types of work. Efficient markets require mobility and interchangeable skills.

7.12 The low displacement cases are where we judge that the direct activity generated by the investment does not displace the output and employment of other UK firms and where there is a low likelihood that the labour resources would have been productively employed in the UK otherwise. The two examples are the Indian web advertising tracker tool firm which works mainly for international clients and the staff have moved from India as a result of the investment. The Indian investment banking firm is similar in that it has initially brought its own staff. The French owned pet food manufacturer is also considered to have low displacement. Its investment has improved productivity in smaller UK pet food businesses that would not have been able to compete as effectively with the large international firm that dominates the market in the UK. Without the investment this particular product would have been imported and there would have been a significant impact on the local labour market.

Related direct effects

Additional resources

7.13 These examples include significant sums of new investment that domestic firms may not have been able to make. This investment aims to improve productivity. This includes the construction of new plant, purchase of new equipment and investment in R&D. The investment made in manufacturing operations in these cases was substantial, both for the initial investments and subsequent expansions. Not all the firms would estimate the scale of the investment but several were in excess of £20 million. Access to finance may not have been a significant challenge over the past ten years, but it is worth noting that it has been raised as a potential benefit by Blalock and Gertler (2005)[6]. Against this, the flow of profits that are generated by these firms will be repatriated to the parent company. Assuming that these firms are located in the UK with the intention of generating a net profit for the parent, it

[6] Foreign Direct Investment and Externalities: The Case for Public Intervention, published in Does Foreign Direct Investment Promote Growth, 2005

is likely that the future flow of profits from the UK operation will exceed the investment made, producing a net outflow.

Contribution to exports

7.14 The final direct benefit is through increasing exports and foreign exchange earnings. A number of the cases show evidence of providing advantages that have generated new exports specifically among the manufacturing firms. It may be argued that even without the inward investment a similar level of exports might have been achieved. However, this would appear unlikely in these cases. The global reach of these companies, their experience in these markets, links with parent companies and the strength of the sales teams mean that they frequently have an advantage in generating exports.

7.15 The examples in the cases include the industrial bearings manufacturer which sells its output to the major car manufacturers through its parent company. The machine tool manufacturer sells 90% of its output as exports. The majority of the sales made by the internet advertising operation are made overseas. Eighty percent of the glass manufacturer's output is exported. The evidence supports the earlier motivations for investment which were not simply to sell in the UK but mostly within the EU.

Direct effects on productivity

7.16 Even where there is significant displacement, inward investment will often bring direct productivity benefits to the sector by replacing poorer performing domestic firms either as a result of competition or through taking over UK firms and improving their productivity. One of the reasons why displacement may be limited is that inward investment can bring additional resources, technology, management and market strength that would not be available otherwise allowing the UK to make better use of resources.

7.17 Most of the cases demonstrate direct productivity improvements. It also seems unlikely that these could have been achieved without foreign investment. These examples are particularly striking in the manufacturing cases. The glass manufacturer has invested heavily in new plant both to broaden the product range manufactured on site and to improve productivity and increase output. We know that the firm's competitors are all international businesses and that if the investment had not been made, production would have been moved to another European site outside the UK. Although there are no domestic competitors, the site and resources may have had an opportunity to continue production under another owner, but given that it would immediately be competing with the firms that have a strong market presence and it would not have had the new glass compound, it may have been difficult to grow. The ownership by the Japanese company brings both new technology and access to markets. This enables stronger productivity that would be hard to achieve otherwise and without which there would be a risk that the resources would be underused.

7.18 The other manufacturers offer a similar story. The French investment in the pet food market has improved productivity through new plant, economies of scale and management changes. Without the investment, the previous, smaller, domestic producers would have found it hard to compete with the heavy marketing of imported products made by a large US conglomerate. By bringing two UK operations together on a new site there are economies of scale that have

improved productivity and allowed the firm to grow market share. Without the investment, either the UK market would depend on imports or another domestic manufacturer could have attempted to move into the market. There is a significant chance that the firms would have closed and that employees would have had to find alternative employment. The impact on productivity of the investment relative to the previous use of resources is therefore significant.

Summary of direct productivity

Table 7-2: Direct productivity

Activity	Productivity	Summary of direct productivity effects
Glass manufacturer	Expansion of plant provides economies of scale and also introduces the manufacture of a new product developed in Japan, strengthening competitiveness – the plant itself is more productive than previously, increasing overall productivity.	High
Software sales	No impact on firm productivity	None
Engineering	New investment and re-organisation have improved productivity reflected in the growth of the firm's profits. Some could have been delivered by other foreign-owned competitors as productively, but some design work would have been lost overseas reducing output from the UK	Low
Internet advertising	There are economies of scale working with the parent company in the UK, improving productivity for both. Competitors are mainly overseas so this would represent a net increase in productivity in the UK	Medium
Specialist pet food manufacturer	Economies of scale and re-organisation have improved productivity directly	High
Bearings manufacturer	Capital investment has improved productivity relative to previous position with little UK displacement	Medium
Biotech research	No direct effects on productivity yet	None
Telecoms equipment	Given the demand for telecoms equipment in the UK it is likely that these contracts would be delivered by foreign-owned competitor offering similar productivity – main effect is through innovation	Low
Distributor of automotive parts	New investment in the UK will increase productivity directly for the investor relative to operating from another European site.	Medium
Computerised machine tools	Further expansion and automation of UK operation directly impacts on UK productivity as a result of new investment. This was already a very productive manufacturer and with little displacement is likely to have a positive effect on the sector average	High
Investment bank	Builds on links with parent in London and offers some economies of scale, but high displacement and competitors likely to have similar levels of productivity	Low
Ad-tracking	Directly competes with a major international advertisement tracking business. Unlikely to be significant productivity effects in the sector.	Low

Source: SQW case studies

7.19 The larger direct impacts on productivity all come through manufacturing inward investment. These investments have helped safeguard jobs and output in these plants by broadening product ranges (glass), re-organising to create economies of scale (pet food) and improving processes (bearings).

7.20 In service businesses, improvements in productivity in two cases came through working with parents already operating in the UK, while the improvements in the engineering firm are attributed to improved management and refocusing the business on core markets.

7.21 Whether these improvements represent genuine improvements for the UK economy depend on whether these could have been achieved without it. Could the domestic market have used the same resources more efficiently in the absence of foreign investment? The productivity improvements are the result of technology or know-how unique to the investor in only a small number of cases. In more cases they are the result of making use of market strength or economies of scale.

Conclusions

7.22 The direct effects of the investment are the measure of additional economic activity that the new investments are considered to have brought to the UK economy. This depends on the scale of the gross effects (the GVA that the investment creates and the employment that it supports) and on the extent to which it replaces output that would have been produced otherwise. The direct effects relate to the proportion of the foreign-owned firm's activity that can be considered a result of its investment. In turn this relates to improvements in productivity that the investor brings.

- In a large number of cases we found that output is not competing directly with UK firms and there is little direct displacement. In only three cases was there direct product displacement, the Chinese telecom investment, the Norwegian engineering company and the ad-tracking business, although in each of these the activities were displaced from foreign-owned competitors operating in the UK.
- Many of the firms are exporters competing internationally in the European market, generating foreign exchange earnings for the UK. Six are exporters competing with other foreign-owned firms operating elsewhere in Europe and in the cases where they serve the domestic market (six) it is in competition with other foreign-owned firms producing goods from outside the UK (import substitution).
- Labour market displacement is more likely, but the extent of this depends on the potential alternative forms of employment
- The direct productivity effects were particularly important in the manufacturing cases. These were driven by introducing new products, improving processes, re-organisation and management of resources and market strength
- Of these there were few examples that were based on solely on new technology or some unique knowledge. Instead market strength and economies of scale were found more frequently

7.23 The literature tends to focus on the innovation and spillover effects which impact on long-term productivity growth. The impact of the direct benefits depends on whether the inward investment demonstrates greater productivity than the activity it displaces. Given that in many cases there was little domestic product displacement, this argument depends on whether it represents a more productive use of labour and other assets. These direct effects can be important, particularly where there is an excess supply of labour relative to demand and a risk that without the investment resources would not be used. We conclude that in the short-term at least the investments in the case studies are largely not displacing domestic products, are improving productivity in their sectors and have increased overall output. The magnitude of the impact depends not only on the technology and knowledge that investors can bring but also on strength of their market position.

8: Innovation effects

Introduction

8.1 The previous chapter considered only the net direct effects of investments in terms of the additional employment, output and productivity that were supported. This chapter considers a range of ways in which the inward investments in the case studies contribute to higher productivity in other firms by providing access to new, improved or better value products and services which can lead to improved productivity or welfare benefits

8.2 These effects are not externalities as the exchanges that generate them take place within the market and the inward investor is directly compensated, however the impact on productivity can be significant. These can be the result of small incremental improvements in products or the introduction of entirely new ones. The main point is that where an investment provides access to products that would not have been available otherwise there is a welfare or productivity benefit for the host country.

8.3 Care needs to be taken here in that many new products are available as imports and may not require any foreign investment at all. This is not always the case as some goods and services need to be manufactured or provided within the host country or may require sales and support teams to help ensure that the benefits of a product or service can be realised. These examples include:

- New products that would not be available otherwise
- Better products and processes that in turn improve productivity in other firms
- Lower prices for consumers on inputs to the production of other goods which would also improve productivity.

Literature

8.4 These innovation effects are usually captured as spillovers in the literature. The most relevant example is the study by Driffield, Munday and Roberts (2002) which examined the transactions linkages and performance impacts of FDI. It found that spillover effects tended to be weaker upstream, in suppliers than downstream with customers. It hypothesised that the FDIs' market power and larger supply networks could allow them to capture productivity benefits themselves through negotiating more favourable terms from domestic suppliers. In contrast the study finds that there are stronger effects on the domestic sector where it is buying from a FDI.

8.5 In part this is the result of the competitive pressures that the FDI can bring to the market through its increased productivity and innovation. In order to win business the FDI must offer some combination of new solutions, better quality and better value. In turn this provides both direct benefits for customers in the domestic sector *and* potentially spillovers by incentivising competitors to also innovate. The case studies help to illustrate examples where

inward investment does this where access to new technology has led to productivity improvements and new opportunities for domestic customers.

Case studies

8.6 There is evidence of significant innovation effects in a number of cases where outputs have a direct impact on their customer's productivity. These benefits appear to be predominantly captured by downstream firms purchasing better inputs from the inward investor because intermediate goods are cheaper and/or better quality.

8.7 There is a trade-off between the benefits of firms that export (export earnings and less product displacement) and the opportunities for improvements in domestic productivity (and welfare) through access to new, improved or better value products or services. The case studies help illustrate these effects and the findings are summarised in Table 8-1.

Table 8-1: Innovation effects

Firm	Innovation effects	Impact on productivity
Glass manufacturer	• Introduced a new product but most sales are outside the UK	Low
Software sales	• Introduced a new product which has had a significant impact on the productivity of customers. Estimates that as a result the MOD has saved £1 million, another domestic firm has successfully used the new software to develop its own products and another firm in the UK has attracted additional research investment to develop new products with it.	High
Engineering	• Investment has retained civil nuclear expertise when there was concern that this could be moved to the far east • UK base has reduced risk for customer of using overseas contractors • Brings parent company technology in bio-mass	Medium
Internet advertising	• New product produced in the UK but mostly exported	Low
Specialist pet food manufacturer	• No significant innovation benefit, but possibly some competition effects through offering alternative to US imports	Medium
Bearings manufacturer	• New products introduced from Japan but mainly exported	Low
Biotech research	• Introduces new technology within the UK – no customers to benefit yet but potential for links with UK firms	Low
Telecoms equipment	• Introduction of new and improved goods and services at lower prices for UK customers, offering significantly improved productivity for major client	High
Distributor of automotive parts	• Investment in new distribution centre rather than Belgian alternative means better service for dealers, allowing them to be more competitive	Medium
Computer-ised machine tools	• Mostly exports but tools are of very high quality (it provides tools for a leading Formula One team) and the firm believes that this quality would improve customer productivity	Medium
Investment bank	• New range of contacts represents a potential improvement in service/lower price for customers	Low
Ad-tracking	• Improved product challenging foreign-owned incumbent would help publishing customer productivity	Medium

Source: SQW case studies

8.8 There are three cases that stand out as good examples. The US software company has a sales and service support office in the UK which sells entirely new modelling software for sophisticated space and defence systems, based on GPS. Customers include a foreign-owned aerospace and defence systems firm which employs 1,000 people in the UK, working on MOD contracts. The use of the software has led to the development of a specific research programme into future communication systems which would benefit a range of sectors including defence, fire services and media. The Programme has attracted £300,000 of funding from the aerospace and defence systems firm, Welsh Government and EU. This is expected to continue for several years.

8.9 The MOD also use the software and the firm estimates that this will have saved them around £1 million compared with the alternative of developing the necessary systems themselves. This would represent a major efficiency, freeing up public funds for other activities.

8.10 A major French defence company embeds the software in their "battle-lab" which has proved valuable in demonstration and in winning contracts for the UK-based part of the firm which employs 12,000 people. There would be a risk that without this type of success some major contracts could go overseas.

8.11 There are other examples where the software has been used to improve products. A UK defence technology firm uses the software embedded as part of their own products. Leicester University Space Research Centre also uses the commercial software for their own research and while this is "in market" it has enabled further research to take place.

8.12 However, the software is imported so we are interested in the difference that the presence of the sales and support office in the UK has made. They estimate that perhaps half of these sales would have happened anyway, but the customers report that the UK-based support has been important in customising the software and has enabled client research to progress more effectively than would have otherwise been possible because of the difficulties there would have been in securing on-site support and in getting security clearance. So, the inward investment is considered to matter in providing initial access and enabling productivity within client firms.

8.13 The second good example is the Chinese telecoms firm and although it is on a much larger scale, the issues are the same. While the hardware is manufactured in China and imported into the UK, the sales and support office is necessary to support customers. The firm has a major contract with a leading British telecommunications company to provide and support telecoms equipment that will be part of the British company's 21CN roll out. The British company states that the 21CN system (where the Chinese company is one of eight suppliers) will save them around £1 billion[7] per annum, a considerable productivity benefit. The presence of the Chinese firm in the UK has been a necessary part of winning the contract and without it the productivity benefits for the British company would have been weaker.

8.14 The third example is the Korean car parts distributor. Although the benefits are not on the same scale, it shows how investment in new facilities results in productivity benefits for car dealerships which can offer a better service at a lower cost because of next day delivery of parts.

[7] Reported on UK telecoms company web-site

8.15 Across the other cases the impacts are negligible either because the majority of output is exported or because the improvements in goods and services are relatively minor. In the case of the engineering business, for instance, the improvements are less tangible. An interview with one customer suggested that the benefit of using this foreign-owned firm was that the work was carried out and managed from within the UK. The alternative would have carried out the design and management of the contract overseas. This introduced an additional risk as well as a series of management problems that the customer was keen to avoid. The investment has also enabled retention of a civil nuclear capability that may have been lost if the parent had moved the operation to the Far East, which was the alternative. Given the need to retain these skills both in developing the future civil nuclear programme and decommissioning, it could be argued that this investment has continued to give the UK access to a resource that might otherwise not be available, potentially increasing costs.

Conclusions

8.16 The case studies identified several examples of innovation effects. These are often treated as spillover effects, but they are not strictly "indirect effects" as they take place within the market. They reflect the way in which inward investment can improve productivity through new, improved or better value projects. To generate these effects the investor must sell into the domestic markets. In summary:

- The scale of these effects depends on how innovative the products are and how effectively they are used.
- The main factors in these cases are driven by new technology
- In our examples the products were manufactured outside the UK with smaller support and sales operations in the UK. It would seem a logical way in which foreign firms would bring new products into the market initially
- In these cases the extent to which the innovation effect is a result of the inward investment depends on the role that the sales and support office plays. This can be wholly additional introducing firms to new technology, or partial, helping firms to use it effectively
- These cases involve an increase in imports which has a negative effect on the balance of trade
- There was minimal direct displacement of UK products in these cases. The scale of effect would be limited where the goods or services offered only a small improvement on domestic goods
- The earlier analysis in this report also highlighted how the initial sales presence of inward investors can develop into much larger investments over time
- Ideally the investment would offer entirely new or significantly improved inputs that do not compete with domestic output, enable increased productivity in clients and have the potential to be manufactured in the UK.

9: Spillovers

Introduction

9.1 Spillovers are indirect effects that the FDI has on other businesses but for which it is not compensated (or penalised). These are effects that can impact on, for example, suppliers, customers, competitors, networks and labour markets. Where these effects are positive, such as when inward investment leads to suppliers improving their products or where domestic competitors imitate new technology or processes, they will benefit the economy but are not captured by the investor.

9.2 These "externality" effects represent a market failure and underpin a rationale for government intervention. For example, if there are positive spillovers for other firms, they would not be taken into account by a potential FDI even though it would represent an overall benefit to the economy. The range of spillover effects and estimates of their size has been the subject of considerable academic debate (see the Literature Review). The main spillover effects are usually considered as being horizontal or vertical. Horizontal spillovers occur within the same industry. These effects impact on competitors through demonstration effects, competition effects, or through the labour market.

9.3 Vertical spillovers work upward or downward. Forward (upstream) linkages are the effects on suppliers while backward or (downstream) linkages are the spillover effects on customers. In addition there can be agglomeration spillover effects (see the literature review for typology).

What does the literature say

9.4 The evidence on the existence and strength of these spillover effects is mixed, but the analysis has become increasingly sophisticated allowing analysis by sector and differentiating between backward and forward linkages. In summary, the literature helps to identify areas where the authors considered there to be a stronger likelihood of spillovers occurring. This supplies a useful check list for the case studies and in the remainder of the chapter we look at how these examples can help support the academic evidence. Since the academic evidence tends to be based on aggregate data, not all of these findings can easily be related to the individual firms. Some of the academic findings are only apparent at an industry or regional level. The main conclusions of the literature are summarised below:

- Several of the studies identify the importance of "absorptive" capacity. The findings suggest that spillovers are more likely to occur where domestic firms in the host country or region have sufficient capacity or sophistication to make the most of any new ideas or technology that inward investment brings.
- The research also finds that the spillover effects were stronger where the FDI sells to domestic exporters. This may be because exporters are of a sufficient scale (and

sophistication) to benefit from any improvements to inputs that the FDI brings or they ay more generally exhibit characteristics that allow for more absorptive capacity

- Another conclusion is that the spillover effects are more powerful where the FDI sells to rather than is supplied by domestic customers. Their position in the supply chain is therefore important. This reflects the potential importance of selling improved and/or cheaper inputs into domestic firms which improves productivity. It also suggests that there are more likely to be negative spillover effects where the FDI is purchasing from domestic businesses (possibly because they have more market power and stronger supply networks allowing them to demand more competitive terms)

- The research also identifies the "technology" gap between domestic and FDI sectors as one determinant of the strength of potential spillovers. The smaller the gap, the better the conditions for spillovers to occur. This finding relates to the more general results indicating the importance of absorptive capacity. With a smaller gap, the more likely domestic firms are to be able to take advantage of any new technology.

- Another determinant was the importance of R&D. Firms that do more R&D are considered to offer better prospects of spillovers.

- One of the studies concluded that there was a geographical constraint on the spread of externalities and that any benefits tended to stay within the region the FDI located in.

What do the case studies tell us?

Methodological issues

9.5 The case studies used interviews with the firms themselves, suppliers, networks and customers to try and identify whether there was evidence of spillover effects and their scale. There were practical difficulties in gathering this type of information. In each case it was necessary to agree with the firm which suppliers, customers and networks it would be appropriate to contact. In several cases, the interviewees asked us not to contact specific suppliers or customers.

9.6 Where they were willing to provide details, these follow-on contacts were themselves not always willing to be interviewed, and where they were, these usually had to be fairly short discussions. The following section looks at evidence for each of the different types of spillover in turn.

Vertical effects

9.7 The examples of spillover effects were mostly related to suppliers. The effects on customers were more accurately captured in the previous innovation chapter. Of the 12 cases we estimate that perhaps four could be linked to positive supplier spillover effects.

- The strongest example is the Japanese machine tool manufacturing firm. In total, they spend around £50 million per year on goods and service inputs with 40% of this spent in the UK and some of the firm's smaller sub-contractors are heavily dependent

on them. The company has the autonomy to choose its own suppliers with the exception of major items of expenditure (such as factory expansion). Since starting in the UK in 1987, it has established close links with its domestic suppliers and involved them in developing new products.

9.8 As a result of working for the firm in the UK, one supplier now also sells to the parent firm in Japan and into plants in China and the US. This supplier estimated that their close relationship with the Japanese firm in the UK had assisted growth and produced productivity improvements of around 5%. The chairman of the supplier company occasionally travels to Japan to meet the FDI's senior management

9.9 There are also some reverse effects where the firm has benefited from the experience of the supplier. The supplier (electrical mechanical controls) has suggested new methods to assist the FDI's operation, which have since been adopted. The innovative nature of the plant is a result of Japanese investment and the firm attracts a lot of visits from customers and suppliers. The suppliers interviewed considered that the presence of the FDI had generated benefits for them beyond the direct effects of supplying the firm in the UK.

- The glass manufacturer uses a system of audits with their suppliers to make sure they are meeting the necessary safety and environmental standards. However, this is common within the industry. The FDI also works with suppliers on designing infrastructure and processes on its site and there are examples of products and services developed jointly. In this case the supplier interviewed considered that the contract had led to "learning" which will benefit their business more widely.

- The third example is also complex. The Korean car parts firm works with one main supplier. Although this relationship has only recently started, the supplier has as a result adapted to new warehouse processes developed by the Korean firm. The two companies have been working together since April 2007 to develop warehouse design and layout, systems design and specification. The perceived benefits to the domestic owned supplier are through learning that can inform other areas of their business. The supplier hoped that developing their relationship with the Korean firm could open new opportunities for them in the Far East as they seek to expand their presence in new markets such as China. The spillover effects are not just through learning to adopt changes in processes but also through the understanding and relationship with the Korean firm which they hope will lead to growth.

- The final example of vertical spillover effects is through the life-science investment in the North East. Taking the university where the investment is based as a "supplier" of services, there are a number of spillover benefits (beyond the direct supply of services) that can be identified. These include the retention of a key academic in the North East, access to expensive laboratory equipment and access to knowledge transfer funding.

9.10 Among the other cases the supplier spillovers are limited either because the suppliers are outside the UK (three) or part of the parent group (two). In one case there were no effects and the two others are service businesses with no significant suppliers.

9.11 There were fewer examples of customer spillovers where the presence of the FDI has had benefits beyond those that relate to the purchase of improved goods or service (covered as part of the innovation effects). Part of the challenge here is that although there are clearly benefits to customers these are not externalities. There are two examples of these, although both might arguably be related to market:

- The US software firm's sales office in the UK has made the main modules of its product available to a number of universities in the UK which has helped the teaching of positional systems. Comments from one of the lecturers using the software indicate that it had made a big difference to students' understanding of the subject and prepared them better for using this type of software in employment.
- The pet food manufacturer uses membership of the Veterinary Nutrition Committee to provide nutritional expertise to their customer base without remuneration.

9.12 Overall, we would conclude that the impact on customers in these cases is mainly through the direct innovation effects rather than through these externalities.

Horizontal spillovers

Methodological issues

9.13 These spillovers are intra-industry and would accrue to competitors or firms undertaking similar activities. These benefits can come from competitors imitating new products, through staff movement or knowledge exchange through networks. There are much bigger challenges in identifying these effects. Case study firms generally were not keen for us to contact their competitors having done detailed interviews with them. The range of firms that could potentially benefit is quite large and the effects are very difficult to identify through interview. It is not always obvious how the presence of one new firm has changed the activities of the others.

9.14 We found that some foreign-owned firms tended to be very wary of providing information relating to their performance and we would imagine that this care would be reflected in how they protect any market advantage that they have. The supposition that these firms do all they can to retain any knowledge or technical advantage and prevent spillovers would seem to be perfectly logical. This is likely to be less important in relation to suppliers or competitors. The potential for these spillovers therefore has to be deduced and examples are more limited.

Through networks

9.15 Although most firms were members of a number of UK networking or industry groups, there was a distinction between those that were mainly marketing opportunities and those that offered a platform for more valuable knowledge exchange. The US software business is a member of the MOD's knowledge transfer network, but did not appear to have contributed or learned much. They tended to use membership of industry groups for business development. By contrast the engineering firm in the North East is part of the North East Process Industry Cluster which brings together most of the main engineering businesses in the region to discuss investment, skills, strategy, productivity and marketing. However, while being part of

the cluster is important for the North East, the manager of the network group did not consider that there would be much scope for technology transfer. The glass manufacturer is well networked and interviews with the Chamber suggest that it has helped other members through its international experience.

Through the labour force

9.16 Firms were asked how changes in labour force might enable spillover benefits. There were no examples of individuals moving on and setting up their own businesses, but there are cases where the opportunities for knowledge transfer are greater than others. The Chinese telecoms firm is hiring the highest quality in communications technology staff and offering attractive packages. Staff at this level will develop a good understanding of the product and there is likely to be a high demand for them. Given the interaction between Chinese and UK staff and the training and experience being provided, there is a strong likelihood of knowledge transfer in both directions.

9.17 The Japanese machine tool manufacturer reported that although they recruited initially from other local manufacturers there had been relatively little staff turnover more recently. There are no direct competitors locally, but the skills are transferable to other manufacturing processes. The firm has invested in new technology and the experience of working in that environment and knowledge of the operations would be useful elsewhere although there are no specific examples. The engineering company provides training across the range of services they offer including nuclear, energy, metals, processing and water. Around 40% of employees are graduates.

9.18 Other examples have less potential. The pet food firm is the only business of its type in the local area and the nature of jobs means that there would be limited opportunity for technology transfer. The industrial bearings manufacturer employs mainly at a skilled manual level and there would be limited opportunity for spillovers. The Indian investment banking operation is small as is the US software firm and the internet advertiser with little scope to impact the labour force.

Competition effects

9.19 There is limited evidence of competition effects in these case studies although it is possible to identify the conditions that make these types of spillover more likely. The most obvious is in markets where the FDI is competing with other firms for sales in the UK. The Norwegian owned engineering firm is a good example. Its presence has both competition and potentially partnering effects. It ensures stronger competition for a number of major infrastructure projects in the UK (often publicly funded), competing with a number of other large and also foreign-owned engineering and construction firms. The competition effect was commented on specifically in relation to their nuclear work.

9.20 There are also spillover benefits from the types of partnering arrangements that are common in the sector. For example, working on ACKtive Nuclear – a partnership with a British engineering and design consultancy and a British construction firm which won a gold award for health and safety (RoSPA 2008) for its work at Sellafield. This type of structure helps to

share good practice within the industry. The beneficiary of these improvements and the competition effects is likely to be the UK public sector which commissions the work.

Demonstration effects

9.21 On a smaller scale, the Indian investment banking firm and the Canadian ad-tracking firm both have some potential to influence larger firms to change what they do by demonstrating improvements and opportunities. However, these are relatively small examples and it is doubtful that the larger competitors would feel it necessary to respond directly. The ad-tracking firm for example exploits a gap in the way that the larger competitor presents data and this could be addressed relatively easily. This would represent a positive demonstration effect but would be less positive for the small ad-tracking firm.

Agglomeration

9.22 Agglomeration spillovers occur where the FDI contributes to a cluster of activity that helps to achieve agglomeration benefits. This might include the development of a pool of trained workers, for example, or generating sufficient activity to support services or facilities. There are several examples:

- The best example of this type of spillover is the global engineering firm's involvement with Teeside University supporting new graduates, and through a Memorandum of Understanding with the Business School which aims at developing cross-training. The firm recently received an award for their contribution to the National Skills Academy for Nuclear and is involved in ensuring that the skills gap in nuclear technology is reduced. They also plans its own Skills academy in the north east in the near future investment.

- When the life-science firm's laboratory was first set up in 2004, they required a lot of expensive equipment such as Bio-imager, Real Time PCR machine, DNA extracting machine and solar simulator. These costs have been partly offset by charging university staff for its use. In effect the investment has provided access to equipment that would not have been available otherwise.

- Finally, the Japanese owned machine tool manufacturer is an important part of the West Midlands manufacturing cluster. The firm takes a leading role in manufacturing networks as well as providing advice on the sector for the RDA. The scale of its operations, training and use of suppliers all contribute to the overall performance of the cluster in the region.

9.23 Among the other cases, the firms were either too small to have any significant agglomeration effects or they were not considered part of any cluster activity.

How do these examples relate to the literature

Absorptive capacity (technology gap)

9.24 The literature found that an important factor in benefiting from positive spillover effects was having the capacity within the firm, sector, region or economy to take advantage of them. It found that the effects were stronger where domestic firms were sufficiently sophisticated to understand apply new knowledge or technology and where they were exporters.

9.25 This makes sense and as far as they go the case study evidence would support this hypothesis. The strong innovation effects resulting from the US software company that sold software into a number of major defence and aerospace contractors reflects a strong absorptive capacity to the extent that one of the firms has embedded it within their own highly sophisticated products. The benefits to the universities that use it also suggest that there is sufficient capacity to benefit.

9.26 The Chinese telecoms firm selling advanced technology to the British telecommunications company for its 21CN project is another example of where the domestic customer is sufficiently sophisticated to take advantage of the technology brought in.

9.27 The domestic supplier that works closely with the Japanese machine tool manufacturer in the West Midlands had been able to benefit from the experience sufficiently to win further contracts with the Japanese HQ and plants in the US and China. The FDI itself is operating within a sophisticated manufacturing cluster in the West Midlands, which was part of the motivation for their original investment. The fact that they have links with local universities supports the view that the FDI is within a sector and area with the capacity to benefit from its presence. The industrial bearings manufacturer also works with a UK university and was keen to come to the UK because of its reputation in tribology.

9.28 It is much harder to identify cases where a *lack* of absorptive capacity has hindered spillovers. One example is the global engineering firm which reported that they tended to use overseas suppliers because they found the quality of UK domestic output to be poorer and more expensive for a number of high value industrial components. As a result of this "gap" the UK is not benefiting from having large procurement decisions made in the UK. However the same firm is working with the local university and Skills Academy to develop training courses which will have wider benefits for the sector and this would not work if there was not a demand for the skills.

9.29 The hypothesis that having absorptive capacity and a smaller technology gap is well illustrated in several examples that relate to technology. One issue in the literature is that this capacity may vary between regions. In these cases studies the location of the firms was usually chosen to have good access to customers and this often means locating near competitors and suppliers (effectively in clusters). The manufacturing firm located in the West Midlands, the glass firm is based on a former ICI site in the North West close to suppliers and the investment banking firm is in London, the software firm is located near London to have access to its major defence and aerospace customers, the telecoms firm is in Basingstoke close to its major customers and with access to a large professional labour pool. As a result absorptive capacity would appear only to be to be a significant barrier where the

location of investment decisions are skewed by grants which may encourage firms to locate in places which have no appropriate networks, customers, suppliers and competitors.

Position within supply chain (including to domestic exporters)

9.30 One of the results of the academic literature (Driffield et al (2002)) found that there were more likely to be positive productivity "spillovers" where the FDI sold output to domestic firms rather than buying from them. A further study found that these were stronger where the domestic firm was also an exporter (presumably because exporters are able to take greater advantage of these spillover benefits).

9.31 As long as the "innovation effects" are included in the analysis, this finding is supported by the case studies. However, we also note that many of the benefits were captured by other foreign-owned firms operating in the UK.

9.32 Those that were introducing new technology (software and telecoms in particular) would deliver significant productivity benefits for customers while the supplier effects are likely to be a little weaker. The main supplier effects identified include a supplier finding new customers as a result, the university benefitting from the presence of the life science research and the partnership with the car part distribution investment. These are positive effects but the impact on productivity may be relatively small.

9.33 What is interesting is that whereas the customer or downstream spillover effects are generated by new investments bringing new technology, the supplier effects (and the horizontal effects) appear to need time to build up. They require FDIs to build confidence and trust with suppliers and networks.

9.34 In these cases at least, the forward spillovers to customers appear more likely to happen fairly quickly, taking advantage of new technology, whereas the backward supplier spillovers may take longer to happen. This is not always the case, access to the research facilities available made available to the university by the life-science firm, for example, represent an immediate benefit. However, given the potential for some supplier effects to take time to develop this could have be an issue for the academic analysis depending on the timeframes used.

Importance of R&D

9.35 Investment in R&D is an important indicator of whether FDI is likely to be high value for the economy. The work by Harrison (2006) and subsequently adopted by UKTI as a way of identifying high value investments makes use of questions on the extent to which the investment will carry out R&D in the UK. There is strong evidence throughout the literature of the importance of R&D as a major source of spillover benefits.

9.36 Half of the companies interviewed carried out some form of internal R&D and three had relationships with UK universities. Excluding the smaller cases, only the pet food manufacturer and telecoms firm do not carry out any R&D.

Table 9-1: R&D investment

Firm	R&D activity
Glass manufacturer	• Spends £750,000 on 10 staff on new product development in the UK No formal university links
Software sales	• None
Engineering	• R&D into nuclear fusion process (10 people) Incremental R&D through contract work with NDA
Internet advertising	• None
Specialist pet food manufacturer	• Not carried out in the UK
Bearings manufacturer	• Three R&D staff and they sponsor a PhD at Loughborough • Has developed new product for Japanese market in UK
Biotech research	• All R&D, three people • Close university link with Newcastle
Telecoms equipment	• Currently all in China but links with the UK science base in development
Distributor of automotive parts	• R&D carried out in Frankfurt, but new processes introduced in UK warehousing
Computerised machine tools	• Spends £1.2 million on R&D and employs 30 staff in NPD Relationship with universities in Birmingham, Warwick, Cranfield and Huddersfield although no formal contracts
Investment bank	• None
Ad-tracking	• Not carried out in the UK

Source: SQW case studies

9.37 Although undertaking R&D is important, for the host economy it also matters whether and how this is absorbed more widely. Each case is different, the R&D carried out by the glass manufacturer in the UK is relatively small scale and staff turnover has been low, limiting the potential spillover effects. By comparison, the machine tools manufacturer does more R&D, has a larger team, works more closely with suppliers and customers and is also more active in network groups. The R&D carried out by the life-science firm in Newcastle is highly sensitive and the firm is in the process of negotiating commercialisation arrangements. If these arrangements with a domestic firm are agreed there would be a strong prospect of both innovation and spillover effects.

9.38 The R&D undertaken by the engineering company sits separately from the firm's main activities and involves developing a form of nuclear fusion. In this case the IP is owned by the firm and was developed initially by a Nobel Prize winning scientist. The work is still very experimental, but because it is being carried out in the UK there is the prospect that this experience, both for the firm in the UK and for those working on it will be significant.

9.39 Table 9-1 shows the extent of the formal R&D being carried out by each of the case study firms. As expected this is mostly associated with manufacturing and the life-science investments. In each case the opportunities for spillovers are greater than among the others because the knowledge is created within the UK and retained by the staff working on it. In each case, the research generated will contribute to the UK's overall expertise in specific

sectors. For instance, the UK has a strong reputation in tribology[8] and the Japanese bearings company's investment in manufacturing, R&D and support for a PhD student helps to support this expertise and its commercialisation. Similarly the machine tool manufacturer in the West Midlands has invested in R&D and worked with universities over the last 20 years. The relationships have strengthened over time, building trust and confidence and this contributes to the UK's reputation in the industry.

9.40 Even so, the cases did not identify specific cases where this R&D has led to increases in productivity in other firms as a result of spillovers. Each firm is guarded about the research they are undertaking and the agreements. Nor was there evidence in these cases of R&D related technology spillovers arising through network activity.

Summary

9.41 Table 9-2 sets out summaries of the actual and potential spillover effects for each of the case studies. The stronger cases are highlighted. These effects *exclude* the innovation effects discussed in the previous chapter. The case studies find:

- The importance of the long term nature of institutional and social networks in strengthening spillover effects
- Supplier spillovers are limited by the relatively weak supply chains outside the manufacturing cases. This is partly because of the global buying power that the FDIs bring
- There is a high level of participation in networks, but the cases highlight that this is frequently for business development rather than sharing technical knowledge. There are some good links with universities both for research and, in one case, direct investment into a university facility
- Evidence of knowledge sharing being stronger among businesses that have been here longer and built up trust and in markets where they are well protected (high barriers to entry)
- A good example of support for training through the skills academies and through work with a local university to improve the pool of labour.

[8] The science and technology of interacting surfaces in relative motion, including the study of friction, lubrication, and wear

Table 9-2: Qualitative summary of spillover effects

	Supplier	**Customer**	**Horizontal**	**Agglomeration**
Glass manufacturer	• Firm carries out quality audits on their suppliers • Supplier reported that it works with the firm designing infrastructure on its site providing some new learning • Products and services have been developed by supplier for the firm • Supplier considered that the contract has led to learning which will strengthen other business.	• FDI customers mainly overseas • No effect beyond improved products for UK customers	• Active in networking events and considered a big player for the regional economy – competitors overseas • Benefits reported by the Chamber were mainly in terms smaller manufacturers tapping into their international experience	• Part of a large chemicals manufacturing sector in the NW
Software sales	• No significant supplier links	• Provides free supply of software to universities • Customer reported that software has also been used to secure research funding from Welsh Assembly Government and EU	• No evidence of effects yet - attend the MOD's knowledge transfer network	• None
Engineering	• No UK suppliers	• Large contracts require working with customers on long-term assignments, although there may be "added value" these are not likely to be related to foreign ownership	• Partnering arrangements with competitors on major sites generate problem solving ideas • Role on Government advisory group • Competition effect noted specifically in nuclear industry where capacity is limited •	• Work with Teeside University on courses and recruit graduates, also with the Business School on cross-training. • Award for contribution to the National Skills Academy for Nuclear • Plans for own Skills academy in the north east • Partnership between British engineering consultancy and construction companies has won a gold award for health and safety for work at Sellafield. Demonstrates spillover benefit of combining expertise

	Supplier	**Customer**	**Horizontal**	**Agglomeration**
Internet advertising	• Supplier interviews indicated no specific influence on their activities	• Key customers overseas – no spillovers in UK	• Firm believes they have brought new suppliers to the UK, increasing competition • No effects yet - relatively new (3 years old) and majority of competitors are global firms such as Yahoo	• None
Specialist pet food manufacturer	• No UK suppliers	• Through Veterinary Nutrition Committee provides additional nutritional advice to customer base	• Competitors are all foreign-owned (mostly US). Membership of PFMA helps share innovation and encourage others to 'raise their game'. • Possible demonstration effect from company's innovative filtration system	• None
Bearings manufacturer	• Suppliers are within the company group	• Considered too small to have any impact on customer behaviour beyond improved products	• Competitors are overseas, very specialist so no spillovers within the industry	• Company cited UK's expertise in tribology as a motivating factor for pursuing research links with UK universities
Biotech research	• Investment has allowed the university to retain a key academic in the North East • Investment also provides the university with access to expensive laboratory equipment • Provided the university with access to knowledge transfer funding as a result	• Focus on R&D - no customers yet	• Since started in UK have made contact with other universities in same sector, but no examples of spillovers • Member of a number of life science networks in the North East	• Uses NE Proteome Analysis Facility which provides common services for R&D in Newcastle and Durham Universities • Potentially exchange of knowledge with other research companies co-located although firms were unable to identify any effect

	Supplier	Customer	Horizontal	Agglomeration
Telecoms equipment	• No significant UK suppliers	• Significant direct productivity benefits through improved products for customers • Firm unwilling for us to contact main customers	• Has become a major player in UK offering advanced technology at lower prices • Competitors are international firms, but through increasing engagement with UK (trade bodies, sponsorship) they have the potential to have significant effects within the sector, through demonstration of technology and competition	• Scale of operation and nature of recruitment of high quality graduates will provide additional training. Labour turnover within the sector is also a likely route given the size of the business
Distributor of automotive parts	• Main supplier has adapted to new warehouse processes developed by the FDI • The two companies work together to develop warehouse design, layout and systems design and specification. • Supplier reported benefits of insights into Far Eastern business and culture and hope that this will open new opportunities in the Far East	• Impact is through improved performance for dealerships, but not spillovers	• No direct competition so more openness found between parts distributors e.g. located alongside German car distribution centre and have exchange visits	• None
Computerised machine tools	• Works closely with suppliers - joint development of new products with suppliers • Has led another supplier to secure business with parent and other sites in US and China • Supplier visits Japan with the firm • Reverse effects through adoption of suppliers ideas in processes	• UK customers visit the factory and learn about products • Acts as demonstration site for technology	• Impact through recruiting from other UK manufacturers when originally set up in 1987 • MD was vice president of Manufacturing Technologies Association • EEF report that firm has hosted demonstrator activities for the industry • Another firm highlighted the FDI as a role model for smaller UK manufacturers	• Contributes to what is an important manufacturing cluster in West Midlands • High absorptive capacity

	Supplier	**Customer**	**Horizontal**	**Agglomeration**
Investment bank	• No significant supplier links	• Networking activity has provided information on Indian and UK markets for customers at events	• Presence of Indian capital investment arm could raise awareness of opportunities for both Indian and domestic. • Small operation and no evidence that this has stimulated competition yet	• Part of City of London financial agglomeration
Ad tracking firm	• No UK suppliers	• Direct productivity benefits through innovative product allowing customers to speed up their processes	• Winning business from key competitor but too small to have much demonstration impact	• Vertical integration with London publishing cluster

Source: SQW case studies

10: Conclusions

Summary of context

10.1 The report follows our approach to the research and is divided into two sections. The first involves a literature review of research into the benefits of inward investment and develops a methodology for using case studies. The second part of the report sets out the findings from the case studies and triangulates some of the findings from the literature. It covers their background and motivations, the influence of the UKTI and RDA support and finally considers the nature and scale of the benefits that they bring to the UK.

10.2 The research is intended to sit alongside UKTI's monitoring of its inward investment activities and the various academic studies on the economic contribution of inward investment. The strength of case studies is that they can be used to demonstrate quite specific examples of behaviour and effect. They help bring to life the hypotheses that the academic analysis puts forward, and we have also found that they help reinforce some of the logic through example. A further strength of case studies is that they can be used to demonstrate the transmission mechanisms and qualitative linkages at plant/firm level, an aspect which is not available in the current academic literature.

10.3 The weakness is that case studies cannot be representative of the entirety of UKTI support and activity and therefore overall findings can only be treated as illustrative. There are also considerable challenges in conducting case studies with foreign firms. The case studies raise a number of interesting questions about the role of inward investment by providing more detail. The academic work goes further, providing analysis of the impact of inward investment on productivity more generally. The case studies will complement the academic literature.

Summary of findings

10.4 The literature review helped inform the approach and focus of the case studies. Our review highlighted a number of factors that contribute to stronger economic benefits and these were then developed as research questions.

Motivations

10.5 The most common motivation for investing in the UK was to use the firm's technological, organisational or market strength to sell goods and services in UK and European markets. This implies that in most circumstances inward investment is technology exploiting rather then technology sourcing, i.e. the spillovers are positive rather than negative. The cases are a mixture of expansion (seven) or a new presence (five). The expansions built on the success the firms had already achieved in the UK, high productivity, good access to markets and opportunities to generate economies of scale. These included four manufacturers making significant investments in UK plant. The new investments tended to be much smaller, sales offices, research and development or smaller service providers.

10.6 Motivations are broadly divided between supply (production conditions) and demand factors (opportunities through growing demand). Of these it is the demand factors that dominate. There were several examples of the opportunities of growing UK and European markets attracting new players in telecoms, software and finance. For the manufacturing expansions production conditions were more important (productivity of existing UK plants, access to land, planning, logistics and workforce). These were essential in increasing productivity and safeguarding the UK site. There were also several expansions which were related to reorganising activities, bringing together several operations in a single new plant and in another, refocusing the business on its more profitable activities.

10.7 There were a number of examples where new technology provided direct productivity improvements and several where it was the *sale* of new technology that was important. In the former group were all four of the manufacturing cases that were investing in plant, in the latter group new software and telecoms brought new technology to UK customers. There is the potential for this through the research and development investment. The others brought economies of scale or improvements in management which reduced costs and increased competitiveness.

UKTI influence

10.8 There was little evidence that the UKTI support was critical in the initial decisions to invest in the UK. This was usually made by the parent company independently. However, there was evidence in most cases that the support accelerated investment, reduced the risk or improved the quality of the investment.

10.9 In relation to timing, although it is not possible to prove, there is always a risk that if investments were delayed they could be abandoned altogether or at least have an impact on performance.

10.10 At present the additionality of support is primarily measured through a fairly direct assessment of the influence of UKTI on decisions about the investment. Some of the comments made during the case studies raised the importance of several other aspects of the support:

- The initial contact with UKTI and the links into the RDAs are not only valuable in their own right in influencing investment, but also "set the tone" for the way in which the UK works with business. From some of the comments, it is apparent that this independence and interest is valued by investors. It provides reassurance about the professionalism of the UK support, whether or not it is used, and this experience could impact on future decisions.

- The first investment is only the start of a relationship and the benefits should be seen in this context. Once in the UK, individual plants must frequently make the case for expansion or the retention of their operation. Any help that can be provided in this can be important and a good relationship with UKTI/the RDA is then vital.

10.11 In both cases the professionalism and satisfaction of clients can have an importance in the long run that is not easily captured through surveys and may be underestimated

10.12 There was one example where UKTI's involvement has led to additional R&D, but none where there has been influence on use of local suppliers or additional training. Cases where UKTI has been able to secure visas more quickly for overseas employees would change the composition of the workforce.

Direct effects

10.13 The direct effects of the investment are the measure of additional economic activity that the new investments are considered to have generated. This depends on the scale of the activity, the GVA that the investment creates and the employment that it supports. The *net effect* depends on the extent to which it replaces output that would have been produced otherwise.

10.14 In a large number of cases we found that output is not competing directly with UK firms and there was little direct product market displacement. In only three cases was there direct product displacement; the Chinese telecom investment, the Norwegian engineering company and the ad-tracking business; although in each of these cases the activities were displaced from other foreign-owned competitors.

10.15 Many of the firms (six) are exporters competing internationally in the European market, generating foreign exchange earnings for the UK. In five cases, the firm sold mainly in the domestic market, but usually in competition with other foreign-owned firms producing goods from outside the UK (import substitution). While product displacement was limited, labour market displacement is more likely to be significant and the extent of this depends on the potential alternative forms of employment. In a tighter labour market, this will be higher than during period of excess capacity.

10.16 The direct effects were particularly important in the manufacturing cases. Of these, there were few examples that were based solely on new technology or some unique knowledge. Instead, experience and access to specific markets coupled with economies of scale were found more frequently to be the source of competitive advantage.

Innovation effects

10.17 Innovation effects reflect the way in which inward investment can improve customers or supplier productivity through new, improved or better value projects. To generate these effects the investor must sell into the domestic markets. The scale of these effects depends on how innovative the products are and how effectively they are used. The cases found the main factor to be new technology.

10.18 In our examples the products were manufactured outside the UK with initially smaller support and sales operations in the UK. It would seem a logical way in which foreign firms would bring new products into the market. In these cases the difference that the investment makes depends on the role that the sales and support office plays. This can be wholly additional introducing firms to new technology, or partial, helping firms to use it effectively.

10.19 The case studies highlight two examples; one where new geographical positioning software has been used to improve productivity in the defence sector and a second where new technology offers better performance and value for a major UK firm.

10.20 In theory, these cases involve an increase in imports, but in practice they tended to displace other imported goods rather than UK products. The earlier analysis also highlighted how the initial sales presence of inward investors can develop into much larger investments such as R&D and potentially manufacture over time. Ideally the investment would offer entirely new or significantly improved inputs that do not compete with domestic output, enable increased productivity in clients and have the potential to be manufactured in the UK.

Spillovers

10.21 One rationale for using public resources to attract inward investment is that it generates positive externalities. These are effects for which the investor is not compensated and as a result the level of investment will be sub-optimal. The cases studies sought to identify examples of these spillover effects.

10.22 Even using case studies it is still difficult to identify spillovers, particularly as the firms and the various stakeholders may not be aware of them. However, there were sufficient examples to help illustrate the effects. The interviews found that the strength of these effects appeared to increase with age and, in fact, the openness to discussing them also was greater among firms that had been in the UK longer. It can take time to build trust and become confident in the firm's position in the region.

10.23 This seemed to be true for both horizontal relationships with competitors and networks as well as in relationships with suppliers. For example the two firms that had the greatest spillover impacts had both been in the UK for well over 10 years.

10.24 The cases found that, outside the manufacturing firms, the supplier spillovers were limited by the relatively weak supply chains. This is partly because of the global buying power that the FDIs bring but also the nature of some of the service sector operations which required few inputs.

10.25 The cases had a high level of participation in networks, but these were frequently for business development rather than sharing technical knowledge. There were some good links with universities, particularly among firms that had been here for some time. There was also a very good example of support for training through working with skills academies and through a local university to improve the pool of labour. In fact the cluster group in the North East (which includes a number of major foreign-owned engineering firms) works hard together to create agglomeration benefits.

Patterns of impact

10.26 Does the impact differ significantly by inward investment source and type or by motivation and location decision? Based on the case studies, a fairly clear pattern of benefits is apparent. New investments that bring access to new technology can rapidly generate positive productivity benefits for customers. They require less time to take effect, immediately improving inputs for domestic firms. In contrast, supplier and horizontal spillovers appear to take longer to develop as firms become more embedded in the economy. These spillovers also appear more likely to be restricted to the local or regional economy being based on

networks, supplies and the workforce while the innovation effects are the result of impacts on a more geographically spread set of customers.

10.27 The examples suggest that the sales and service cases were more likely to provide the innovation benefits and the manufacturing cases were more likely to offer the supply spillovers through their involvement in networks, supplier relationships and through investment in R&D. Table 10-1 summarises these effects.

Table 10-1: Summary of effects

	R&D	Spillover effects	Innovation effect	Direct effect on sector productivity
Glass manufacturer	Medium	Medium	Low	High
Software sales	None	None	High	Low
Engineering	Medium	High	Medium	Low
Internet advertising	None	Low	Low	Low
Specialist pet food manufacturer	None	Low	Medium	High
Bearings manufacturer	Medium	Medium	Low	Medium
Biotech research	High	High	-	-
Telecoms equipment	None	Medium	High	Low
Distributor of automotive parts	None	Medium	Medium	Medium
Computerised machine tools	High	High	Medium	High
Investment bank	None	Low	Low	Low
Publishing ad-tracking	None	Low	Medium	Low

Source: SQW case studies

Conclusions

10.28 In considering the cases, it appears that they all generate some form of positive or at worst, neutral effect on the economy. However, the scale of the effects varies considerably. Although a fairly partial view, it would suggest that the manufacturing cases here offer the strongest return. They tend to do more R&D, have at least some supply chain, are more likely to participate in networks and employ more people, all off which makes them more likely to generate spillover effects. They also tend to export more which means they are less likely to directly displace domestic firm output (although there will be some labour market displacement). In addition, the necessity for manufacturing to make significant physical investment in plant represents a more significant commitment to the UK economy. If this means they remain in the UK for longer, the research suggests that there will also be a greater chance of spillover effects being generated over time.

10.29 There are also significant benefits from the cases that brought new technology to the UK, even where it is imported, as well as the improvements this offers in terms of productivity for customer firms. These firms also bring competitive pressure to the market and create incentives to innovate.

10.30 The research generally supports the hypothesis that absorptive capacity is important, although in the one region where this may be an issue, the engineering firm in the North East was investing heavily in strengthening the labour market.

10.31 It was more difficult to determine whether there were stronger spillover effects forward, to customers, than backwards to suppliers as the literature suggests. There were good examples of innovation effects which led directly to productivity improvements for customers, and supplier effects, although these were arguably not as powerful.

10.32 Many of the benefits reported accrue to other foreign-owned businesses rather than domestic owned ones. In almost all the cases the main competitors were other international firms, often with a sizable presence in the UK. This makes it increasingly hard to determine the effects on just the domestic-owned sector. We also found that, in these cases, some of the major beneficiaries of strong innovation and competitive effects were the public sector and the large utilities.

10.33 The research also provided examples of the importance of time and trust for genuine spillovers to occur. These seemed to be more likely in the cases of expansion where a firm has been in the UK for some time.

10.34 In terms of the support provided by UKTI the case studies were broadly in line with the general monitoring findings. The majority of additionality generated is "partial", bringing projects forward, reducing risk or improving quality. The support helped identify appropriate locations, provide information and contacts and increase understanding of the business environment. Frequently firms reported that the support helped "smooth the way". We suggest that this role is perhaps more important than it may be given credit for by setting the tone for what should be the start of a long term relationship and in providing reassurance about the quality of the UK as good business environment.

10.35 Taking these factors into account, on the basis of the qualitative evidence provided by the 12 case studies, the conclusion is that the economic rationale for encouraging inward investment is sound. Identifying the benefits is clearly complex, but the case studies highlight good examples and illustrate how different investments contribute in quite different ways. There are examples of how FDI has introduced new and more efficient technology, provided better access to international markets and contributed to their networks and regional business development. Some cases have produced stronger benefits than others, but the case studies help understand how and why these occur.

Learning points for future research

10.36 This research used case studies as a way of illuminating some of the detail and effects of inward investment and UKTI's influence. The approach has provided a lot of advantages, but also a number of challenges. Using case studies provides a much stronger "back story" for each investment which is helpful in understanding how each investment has developed. It allows firms to identify the points that they consider important rather than be guided by a fixed set of questions and it enables the examples to focus on elements that illustrate specific points.

10.37 The process of interviewing stakeholders was also useful. As well as a source of information for spillover effects it acted as a "reality check" on some of the feedback from the FDI. This worked not only to identify effects that the FDI would not know about, but also to contradict claims that the FDI had made about its own influence.

10.38 However, case studies are not representative and this makes it less appropriate to draw general conclusions. We found it difficult to secure interviews and to ensure that we had the time to cover all the information we needed. This was also a challenge with stakeholders who had even less incentive to participate. Even where it was possible to get hold of stakeholders, there were limitations to the information they hade or were willing to pass on.

10.39 Even with these difficulties, the case study approach gathered sufficient material to illustrate some interesting effects, even if these were partial. There are also improvements that could be made. The process worked best when the RDAs were involved as they have a lot of knowledge about the firms and were able to provide a lot of help. Supplier and customer stakeholder interviews worked best where they had the clearest view of the impacts. Horizontal spillovers were far harder to identify as firms were reluctant to give contacts for competitors and networks were often unable to comment on specific contributions of the membership.

10.40 The process hinges on how willing the FDI is to provide contacts and permission to speak to stakeholders. If this exercise were repeated, it would be important to get a stronger commitment from the FDI to provide these at the outset.

10.41 There are some specific methodological issues that the UKTI intervention poses. The initial contact takes place overseas, often with different parties to those that eventually work in the UK. The support is only ever one part of a complex process for the firms involved and will often lead into other support delivered through the RDAs. The overall aim of securing productivity benefits for domestic firms which are not directly part of the process also makes assessing the impacts a challenge.

10.42 There is no single method that can capture these elements effectively and a mixed method approach is necessary to pull the threads together. There is merit in developing the use of case studies alongside other monitoring data, potentially using the two together. Additionally, once a series of companies had been recruited to act as case studies, they could form the basis of a longitudinal study. This could be used to test further the finding that the beneficial effects of FDI increase the longer the firm remains in the UK.

Annex A: Japanese Glass Company

Overview

Company background

A.1 The Japanese Glass Company, is one of the world's largest manufacturers of glass and specialised chemical products with a total turnover of around $12 billion. The group has four subsidiary companies:

- Flat Glass Company
- Automotive Glass Company
- Display Company
- Chemicals Company.

A.2 The headquarters of the Chemicals Company in Europe is based in Lancashire and currently has a workforce of 188 (including two part-time staff). This site was previously owned by a major British chemicals company until 1999 when it was bought by Japanese Glass UK. Chemical manufacturing has been taking place at the site since the 1800s.

A.3 The main activity of the Lancashire site has been manufacturing PTFE (polytetrafluoroethylene), a synthetic fluoropolymer (or plastic) used most commonly as a non-stick coating for pans and other cookware but also used in containers and pipework for reactive and corrosive chemicals. This Teflon-like product has been around since 1952.

A.4 A new production plant was completed in 2007 (the original announcement is likely to have been in 2004), expanding the existing Japanese Glass UK site in Lancashire. This represented an investment of around £30 million by the Japanese Glass UK's parent group. A small number of operations-based jobs have been created (estimated to be around 10-15 jobs) and this investment was important in safeguarding the existing employment levels. However, the main purpose of the expansion was to build a facility that could produce ETFE (ethylene tetrafluoroethylene), which is safer to manufacture than PTFE and can produce a stronger plastic coating.

A.5 The role of the Lancashire site has changed over recent years with additional manufacturing (now producing ETFE) and more reselling of imported products from Japan. The site has a reasonable level of operational autonomy in terms of selecting local suppliers and has some responsibility for innovation and R&D. However key strategic decisions for the site are made in Japan. The Japanese Glass Company owns two other companies in the UK, both based in the Midlands – Flat Glass Company UK (Rugby) and Automotive Glass UK (Northampton).

Motivations for investment in the UK

A.6 The main motivation for this investment by Japanese Glass UK was to launch its new product, ETFE, and serve its growing market of customers in Europe and the US. Over half of

Japanese Glass UK's total customer base is in Europe and the US. ETFE was previously only manufactured in Japan and was difficult to transport due to the toxic and dangerous nature of the product. The company also wanted to consolidate and build on its existing presence and manufacture more added value products from the UK.

A.7 The Japanese Glass Company had also considered expanding its US facility but decided against this because of costs, expertise and overall plant capability. There were no other locations considered within the UK since it was already manufacturing PTFE in Lancashire.

A.8 Anticipated benefits have yet to be realised as the expansion has not been as successful as anticipated. The construction of the plant has taken longer than planned and consequently has been more expensive for the company. Some of the difficulties in construction arose because of the different cultures (between Japan and the UK) and approaches (for example, different Health and Safety considerations in the build design). Discussions with the company indicated that the Japanese management of the parent group were not overly impressed with the British engineering companies involved in the build.

UKTI assistance

A.9 UKTI has been involved through the British Embassy in Tokyo. Agency officials met with senior Japanese Glass Company management and shareholders in Tokyo, providing them with information on the support that would be made available to them to expand their UK presence. The interviewee indicated that UKTI made a persuasive case for expanding the Lancashire operation, '*UKTI did a good job of influencing the Japanese Glass Company to expand in the UK*'.

A.10 However, UKTI involvement did not provide any direct financial support but was more about providing reassurance that if the company experienced any problems with their investment (regulations, construction issues etc.) they could access support from government. Whilst the support was useful, the company indicated that it had a limited influence on their final decision to invest in UK. During the investment process, advice was also provided by NWDA and Wyre Borough Council, particularly in relation to local planning issues.

A.11 Although the company has appreciated the goodwill from the various agencies involved, they have been slightly disappointed that there has been no direct financial assistance. The company is aware that another Japanese manufacturing company recently received a grant to invest in St Helens.

A.12 The only potential tangible business benefit the company could identify from this public sector support was the upcoming opportunity to bid for London Olympic construction contracts. Both UKTI and NWDA have been working with the company to put them in contact with the relevant people at the Olympic Delivery Authority. There is a good chance of success here because of the company's recent involvement in the Beijing Olympics (described in more detail below).

A.13 The company was hopeful that the support from UKTI and other government agencies could assist them with some recruitment issues in particular with suitably qualified engineers. Local agencies and the recently launched National Skills Academy for Process Industries (NSAPI)

are currently looking at ways to help Japanese Glass UK resolve some of the skills issues that it continues to face.

Future development

A.14 Although the company has experienced some difficulties with its recent expansion, the fact that it made this investment demonstrates its commitment to chemicals production in the UK for the foreseeable future.

Innovation and R&D

A.15 Japanese Glass UK spends between £500,000 and £1 million each year on research and development at its Lancashire site. Most of this is spent on the salaries of around 10 staff that work on new product development. This is all done within the company, although some is done in Japan on their behalf.

A.16 The company does not have any formal links with UK universities although they sponsor an MBA student at Bristol University. Japanese Glass UK does not perceive there to be any real need to get involved with any local university at the moment although would not rule this out in the future.

A.17 Many of Japanese Glass UK's PTFE and ETFE products are new to the UK. The company's new ETFE products have been used in some recent high profile construction projects:

- The new Allianz Arena football stadium in Munich has the biggest ETFE membrane in Europe consisting of 2,760 cushions manufactured from Japanese Glass UK's ETFE film. The film is transparent, lightweight (reducing the costs of its supporting structure), durable and flexible (allowing architects to come up with innovative designs). Cushions within the stadium's membrane can cushions can be illuminated red, white and blue to enhance its appearance.
- Japanese Glass UK also supplied the ETFE film for the roofs of both the National Stadium ('Bird's Nest') and National Aquatics Center in Beijing. The National Stadium used about 50,000 m2 of ETFE film and the Aquatics Center used about 300,000 m2 of the ETFE film, making it the largest and most complex ETFE project in the world.

Suppliers

A.18 The company's main inputs are energy (electricity and gas), raw materials, A/R22 (manufactured in Runcorn), and sub-contracted engineering services. The products sourced are all commodities and can not be regarded as highly innovative. Bought in goods and services account for around two thirds of turnover and nearly all of these purchases are made in the UK – half the costs relate to energy costs and the remainder is purchased in the North West.

A.19 Japanese Glass UK has a policy of carrying out audits on their suppliers to make sure they are meeting the same safety and environmental standards. Japanese Glass UK's own management system is quality certified to ISO 9001 and ISO 14001. The company as a whole has

commitment to 'chemistry for a blue planet' and aims to 'create a safe, secure, comfortable and environmentally friendly world with chemical technology'.

A.20 This practice of supplier audits has continued on from when the site was owned by ICI. This type of interaction illustrates a positive influence that Japanese Glass UK has on its regional suppliers ensuring that they meet the same high standards.

A.21 The case study included discussions with one of Japanese Glass UK's main suppliers that provides bulk liquid ethylene to their new ETFE facility. They also lease the ethylene tank and associated equipment which was designed especially for Japanese Glass UK. Although production at Japanese Glass UK's new ETFE facility has been quite sporadic so far, the supplier company has planned for up to 20 tonnes of bulk liquid ethylene per month and also receives rent for the ethylene tank.

A.22 Although not willing to disclose the value of this contract with Japanese Glass UK, the supplier considers it a 'significant amount'. Loss of this contract would have a significant impact on the supplier's UK operation. The company only has one other customer in the UK which has four sites and the product that they supply to Japanese Glass UK is highly specialist. Much of this can therefore be regarded as additional output for the supplier company.

A.23 This supplier worked closely with Japanese Glass UK in designing the tank and other infrastructure at Japanese Glass UK's Lancashire site. Products and services have been developed especially for Japanese Glass UK and there has been a lot of learning which will inform the supplier's other business. However, the interviewee did not think it likely that his company would learn much about the different cultural approach of its foreign owned customer.

Customers

A.24 Japanese Glass UK's turnover in 2006 was £60 million but this figure includes the resale of imported products. Although the company does not normally disclose the sales solely relating to UK production, it is estimated to be around £40 million. Eighty percent of their sales are exports with 70% sold to other parts of Europe and 10% in the US. Around 10% of products are sold through local offices in these countries.

A.25 Japanese Glass UK sells its PTFE and ETFE products to a range of customers but primarily to the automotive and aerospace industries. Its customers tend to be specialist manufacturing intermediaries (for example their product is currently being used for the plastic coating to wires on the AIndia Investus). The influence on their customers really depends on how these products are applied but, based on some of the advantages highlighted earlier in terms of the ETFE film used in sports stadia, one would confidently say that customers derive productivity benefits from using Japanese Glass UK's innovative products. However, with a high proportion of exports, these productivity gains are likely to occur outside the UK.

Competitors

A.26 The company does not have any direct competitors based in UK. The main competition is based in Germany, the US and Japan.

Networks

A.27 Japanese Glass UK is involved in two local/regional networks. The first is Chemicals North West, an industry-led chemical cluster support organisation, funded by NWDA. The North West is the largest regional centre for chemical manufacture in the UK with over 800 organisations including 500 manufacturers. Average GVA per employee in the chemicals sector in the NW is estimated to be around £55,000. Chemicals NW provides a link between companies and a range of support organisations such as Business Link NW, NWDA, UKTI, Chemistry Innovation KTN (Knowledge Transfer Network) and NW Universities Association.

A.28 We understand from the speaking to the network that Japanese Glass UK has attended a number of their events over the years, where they have had an interest. For example they recently attended an event on REACH, new EU legislation for the registration of chemicals by all manufacturers and importers of chemicals.

A.29 Japanese Glass UK has been a longstanding member of the North and Western Lancashire Chamber of Commerce, joining in 1978 when it was still part of ICI. Japanese Glass UK has been active in the international trade network which is a forum of exporters with three employees recently attending a customs event.

Analysis

Direct effects

A.30 This investment created up to 15 additional jobs but more importantly safeguarded the existing workforce (around 170 existing employees) in Lancashire. Discussions with the company indicated that if the UK site had not been chosen for the new EFTE production facility, its future may have been in doubt. Japanese Glass UK is an important company for the local economy one of the few employers that can offer full-time and well-paid jobs. Based on the financial data (rough estimates) provided, the company generates around £13 million in GVA which is over £70,000 GVA per employee and significantly higher than the sector average quoted above.

Direct market effects

A.31 The importance of a company to a region also depends on the supply-chain linkages and the extent to which it is integrated with other companies. We understand that around half of Japanese Glass UK's bought in goods and services are purchased in the North West with the remainder bought in other parts of the UK. Whilst on the face of it, this seems as if the company is well integrated in the regional economy, the interviewee highlighted that their main suppliers are large companies themselves and so will probably not rely too heavily on

Japanese Glass UK's custom. With a high proportion of exports, anticipated productivity gains for customers of Japanese Glass UK are likely to occur outside the UK.

Evidence of knowledge spillovers

Horizontal

A.32 According to the local Chamber of Commerce, the company has been quite pro-active in participating in networking events. They are considered a big player for the regional economy with a strong presence from when they were part of the British chemicals company. The perceived benefits to other Chamber members are mainly in terms of tapping into their international experience and different management styles (from Japan). They also display a very professional and productive manner when attending events (an example given was working on their laptops whilst waiting for an event to start). This provides a good role model for other perhaps smaller Chamber members.

Vertical

A.33 Since nearly all of the company's inputs are commodities, there is limited scope to influence they way Japanese Glass UK's suppliers do business. However, as highlighted earlier, the supplier audit process to ensure compliance with necessary safety and environmental standards is likely to have some positive impact on the performance of these businesses.

Direction of spillovers

A.34 Spillovers are likely to flow both ways because of the company's involvement in local and regional networks. Similarly there is evidence that Japanese Glass UK worked closely with one of its suppliers to design and develop the new ethylene tank. There is likely to have been some degree of knowledge exchange during this process.

Absorptive capacity

A.35 The North West is an historic centre for both glass manufacture (based in St Helens) and chemicals (based at Port Sunlight on Merseyside). As a result, absorptive capacity for knowledge spillovers related to advanced glass and chemicals manufacture is high.

Position in supply chain

A.36 Most influence is likely to be on domestic suppliers since a high proportion of sales are exports.

Regional and spatial dimension

A.37 Strong presence in the North West chemicals manufacturing cluster and therefore we would expect the influence of the company would primarily be regional.

Demand for labour (skilled and unskilled) and influence on wages

A.38 With no direct competitors based in the UK, the interviewee does not believe that Japanese Glass UK has had an impact on demand for labour or influence on wages. In terms of the local economy, it is an important employer for engineers and chemists who would otherwise need to move out of the local area to find alternative employment.

Summary table

Table A-1: Summary

Business	Manufacturer and supplier of specialised chemical products
Choice of UK	Expanding existing UK production facility in Lancashire to launch new product (ETFE) for UK and European market
Assistance from UKTI	Initial support provided at meetings with Japanese management in Tokyo - '*UKTI did a good job of influencing Japanese Glass UK to expand in the UK'*
Effect of assistance	Limited impact on final decision but provided welcome reassurance
Benefit to clients	Providing innovative products to manufacturing intermediaries – positive public response to high profile product use in sports stadia in Munich and Beijing. Benefits mainly for overseas customers.
Benefit to suppliers	Purchase half their inputs from the region and the remainder from the rest of UK
Benefits to network	Considered a major player in the local economy and also significant in the regional chemicals cluster. No evidence of benefits to fellow members but could be regarded as role model.
Effect on competitors/market partners	No direct competitors based in the UK therefore difficult to identify any impact
Commitment to market	Recent investment to launch new product signals long term commitment
Direct effects – the economic activity supported by the firm itself	10-15 additional jobs created but also safeguarded the existing workforce (175) and contributing to regional productivity levels (higher than the regional average).
Direct market effects	Very positive as all inputs purchased in the UK and 80% of sales are exports.
Evidence of spillovers (horizontal and vertical)	Limited evidence of spillovers but audits of suppliers to ensure compliance with safety and environmental standards is likely to have positive impact on their overall performance. Some degree of interaction between the company and others at networking events.
Direction of spillovers	Likely to flow both ways with the company's involvement in local and regional networks. Also evidence of joint working with supplier to design and develop new plant infrastructure.
Absorptive capacity	As the NW is the main regional centre for chemical manufacturing, absorptive capacity should be very high.
Position in the supply chain	Most influence is likely to be on domestic suppliers since a high proportion of sales are exports.
Export-orientation	Also since the chemicals manufacturing sector is export-orientated, there is likely to be significant learning from Japanese Glass UK for other exporters (this would relate to any horizontal spillovers).
Regional and spatial dimension	Most benefits are likely to accrue to other suppliers and chemicals

Business	Manufacturer and supplier of specialised chemical products
	companies in the NW
Demand for labour (skilled and unskilled) and influence on wages	Too small

Source: SQW

Annex B: Software Sales Limited

Overview

Company background

B.1 Software Sales is a software solutions design company based in the US. It produces highly sophisticated software that offers both modelling of physical objects in space and imaging technology for satellites. The software has a range of applications including space programmes, defence systems, satellite tracking and imaging. For example, the software is used to model the movement of debris in space in order to time the launch of new satellites. It can determine where satellites are pointing at specific times to help military operations, it can be used to help guide rockets and provide images.

B.2 The firm had been working with the UK military in the US and was keen to provide sales and support services in Europe. Although it has global network of sales offices, these were virtual and the firm was keen to have a physical presence that could provide support to its growing number of global users more easily.

B.3 Although UKTI was considered supportive it was not considered to be the deciding factor in the decision to set up in the UK. The link with the MOD was already developed and it made sense to open a UK operation as a base for wider European support. However, UKTI and EEDA were helpful in deciding on a location and a number were considered before settling on St Albans.

B.4 The business in the UK now employs seven people, selling to a number of major aerospace businesses and agencies including the MOD, RAF, and major Dutch, British and French companies. The software is designed in the US and the UK operation provides sales, support and training in using the products. From the UK, Software Sales manages a network of global sales partners.

B.5 The operation started in 2005 and the firm estimates that 50% of sales could be attributed to the presence of the UK operation. In total the office manages £750,000 of UK sales and £4 million internationally (excluding the US)

Motivations for investment in the UK

B.6 Software Sales previously worked through a global network of partners, but with growing sales the firm had decided that it needed an office outside the US to manage this network and provide sales, support and training closer to market. The firm had existing relationships with the UK MOD in the US and the choice of the UK as a base made sense in relation to the customer base and logistics. They approached UKTI and were provided with summaries of a number of regions in England. Further help was provided by EEDA who gave more details about properties in the East of England. While the support did not determine the investment it did help it take place more smoothly. Other possible sites were at Farnbourgh or Reading.

Market interactions

B.7 Software Sales operates in a very small niche market. There are no direct competitors as the market is too small and the cost of entry too large to interest other businesses. The barriers to entry are very high because of the huge upfront investment required in the development of the software engines, which prevents small companies starting up. Equally it is such a niche market that larger players in the software design field do not consider it worth investing. Software Sales has given themselves a strong position as incumbents.

B.8 The purchase decision for this type of software is not whether to use Software Sales's product or another, but whether to develop a customised solution themselves. The competition is effectively their customers' in-house teams of software designers. Given the options and support that Software Sales offer, this makes for a strong offer.

B.9 Software Sales' software is effectively embedded within other products and used as a selling tool for companies to demonstrate graphically the use of their other technologies in "battle labs". This means that the economic effects are both to improve productivity (where it replaces client teams that may have had to work on a custom solution) and enhance the quality of the products in which it is embedded, helping UK based companies to win more contracts.

B.10 While there are no competitors, these impacts can be examined more closely through the experiences of customers.

UKTI assistance

B.11 There was modest assistance from UKTI in bringing the operation to the UK, but the decision had largely been taken. The support was in finding the best place for the firm to locate, considering its logistical needs. The UK CEO worked for the US operation and already had connections with the UK and knew the area fairly well before moving to set up the office in St Albans. Support was then transferred to EEDA with whom they have had a good relationship. EEDA were able to help with property and provide an understanding of the business environment which has been valuable.

Future development

B.12 Software Sales in the UK has grown from one person in 2005 to a team of seven and plans further growth through the continuing expansion of its range. The core software engine is supplemented by a long list of add-ons and technical support that allow it to be customised. The UK support allows clients to get the best out of the system. As the product range grows there will be further call on the UK operation to manage the global network of partners and provide support and training. There are no plans for further offices, so most of this growth would be managed from the UK.

Innovation and R&D

B.13 Software Sales' products are developed in the US by their 250 staff. None of the development is done in the UK and this is unlikely to change. However, from interviews with customers the product itself is supporting a great deal more R&D. A major Dutch company

uses the software and has also secured a £300,000 annual grant from the EU, Welsh Government and its headquarters to undertake defence related research. The use of the software has allowed a British aerospace company to develop new products and the software is also being used in Universities, strengthening students knowledge of these systems.

Suppliers

B.14 There were considered to be no significant supplier linkages. All of the products are supplied from the US and the only supplier linkages are with basic office supplies and premises.

Customers

B.15 Software Sales (UK)'s customer base includes; the RAF, GCHQ, major aerospace companies in Britain France and the Netherlands, the Leicester university space research centre and a number of universities. It is difficult to say how much of this business is a result of the UK presence, they estimate 50% but the consultations suggest that it has provided a much better customer service and as a result speeded up the use of the products and the value that they offer.

Competitors

B.16 The only competition is from the in-house teams within client organisations. The barriers to entry, the niche nature of the market and the strength of the incumbent mean that there are no other commercial providers of this type of software. This makes pricing difficult as the marginal cost of producing more of the software and supporting it is very small, but it can have a significant impact in productivity and product improvement for clients.

Networks

B.17 Software Sales is a member of several networks, but its involvement was given as business development rather than as part of a cluster. There are not likely to be significant spillover effects. They have produced an article for the Royal Aeronautical Engineers Society and attend meetings of the Royal Institute of Navigation. They also attend the MOD's knowledge transfer network, although there has been relatively little contribution to date.

B.18 Software Sales also provide software free to a number of "partner" universities to improve training for students and feedback from lecturers highlighted their value. It also acts as a marketing tool for Software Sales further embedding their software as the leading application. Commercial benefits and the wider spillover benefits for the labour market are therefore entwined.

Analysis

B.19 This section analyses the benefits of Software Sales presence to the UK economy. The direct impact is relatively small. The main benefit for the UK economy is better access to powerful new software applications and improved service. The software is in turn embedded in the outputs of client businesses generating additional activity. These benefits take place within the market, i.e. they are paid for, but nonetheless create economic benefit if it can be shown

that without its presence these would not have occurred. There is less evidence to demonstrate knowledge spillovers (which occur outside the market) and would be reflected in competition and demonstration effects or increases in knowledge among suppliers and customers. The benefits are 'inter' rather than 'intra' industry.

Direct effects

B.20 The investment of Software Sales in the UK office supports seven high value jobs in sales, support and training. The manager moved Software Sales to the UK and small number of local recruits. Turnover of the office from UK sales is around £750,000, but international sales around £4 million. Without the office the UK sales are estimated to be around half this.

Direct market effects

B.21 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK-based firms through the provision of new, better or lower cost products and services than were available previously. These benefits are very apparent in the case of Software Sales' sales and backed up by customers:

B.22 The Dutch defence systems client employs 1,000 people in the UK working on MOD contracts. The use of Software Sales software has led to the development of a specific research programme into future communication systems which would benefit a range of sectors including defence, fire services and media. The Programme has attracted £300,000 of funding from the Dutch company, Welsh Government and EU. This is expected to continue for several years. Without Software Sales' software this would not have happened. The UK office has enabled this research to progress more effectively than would have been possible otherwise because of the difficulties there would have been with time-differences, securing on-site support and getting security clearances.

B.23 The RAF also use the software and Software Sales estimate that this will have saved them around £1 million compared with the alternative of developing the necessary systems themselves. This would represent a major efficiency, freeing up public funds for other activities.

B.24 The French client company embed the software in their "battle-lab" which has proved valuable in demonstration and in winning contracts for the UK-based part of the firm which employs 12,000 people. There would be a risk that without this type of success some major contracts could go overseas. Software Sales' UK-based support has been important in customising the software, so the additionality of the UK investment is partial rather than full.

B.25 There are other examples where the software has been used to improve products. The British client company uses the Software Salses software embedded as part of their own products. Leicester University Space Research Centre also uses the commercial software for their own research and while this is "in market" it has enabled further research to take place.

B.26 In most of these examples, the scale of the benefits clearly outweighs the investment. A large proportion of these benefits will accrue to the MOD through the various military uses.

Evidence of knowledge spillovers

B.27 Knowledge spillovers work through a number of channels (Girma et al 2007, Gorg and Greenaway, 2004). Spillovers are defined as benefits which accrue to UK firms for which the foreign firms are not compensated. The firm works within a small, international community and the linkages are fairly limited. There are relatively few horizontal links, with no obvious competitors and fairly little network interaction. The only examples are through the provision of the software to universities which was reported as improving teaching outputs. The only vertical linkages beyond the direct market effects (technology spillovers?) are forward (customers) enabling further R&D.

Horizontal

B.28 These are intra-industry spillovers where firms benefit from foreign presence in the same industry as their own. There was no evidence of spillovers intra-industry or within networks. However, the provision of software free to partner universities could be seen as an example of a contribution to wider networks. Although this is outside the market and would be considered a knowledge spillover, there is commercial logic to making it available to encourage its wider use as an industry standard. Software Sales a member of several networks but their activities to date have been fairly limited.

Vertical

B.29 Because there are effectively no UK-based suppliers and the software is sold commercially, there is no indication of vertical knowledge spillovers. The software has facilitated a great deal of further research and development and training, but this would be treated as technology rather than knowledge transfers.

Direction of spillovers

B.30 There is no indication of any reverse spillover effects in this case. Investment is driven clearly by what the literature refers to as 'ownership' advantage.

Absorptive capacity

B.31 In terms of absorptive capacity, it is clear that the firms linked to Software Sales have the capacity to use the technology effectively to generate their own productivity benefits. However, with such large clients and the international nature of the market, this is not related to geography and hence the concept of the absorptive capacity of a particular geographical region is not applicable in this case.

Position in supply chain

B.32 As with a number of case studies the hypothesis that the FDI's position in the supply chain impacts in the extent to which productivity gains (Driffield et al (2002)) appears to be well founded. Software Sales sells directly into a number of UK (public) and UK-based firms all of which report significant productivity benefits, while the backward links to suppliers are very limited.

B.33 The benefits that accrue to large public sector agencies are apparent. The support provided by Software Sales has contributed to significant public sector savings that would not have been achieved otherwise. Even where the clients are private sector, they are largely delivering public contracts.

B.34 As with a number of examples, the multinational nature of the market makes it hard to differentiate between domestic and foreign-owned businesses.

B.35 We would also add that the example supports some of the findings of Girma et al (2007) on the differences found in productivity benefits between domestic firms that export and those that do not. Selling technology into export businesses (albeit in this case the French and Dutch companies which are not domestic) does allow a greater value of the technology to be realised than would be the case if they operated in the UK. One example is that the use of Software Sales in by the French company in the UK has encouraged its use in other countries.

Regional and spatial dimension

B.36 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI. The nature of the market that Software Sales operates would not immediately appear to fit with this. The productivity benefits relate to the geography of the market rather than to local suppliers. However, when we consider that the decision on where to locate is related to the market, the link becomes more apparent. It raises the issue of causality. In this case it is not that the productivity benefits tend to be limited by geography, but that the choice of location means that the benefits appear to be clustered around the business.

Demand for labour (skilled and unskilled) and influence on wages

B.37 The impact on demand is stronger for skilled labour than unskilled through direct recruitment, but the productivity savings could potentially reduce the need for clients to employ their own designers. In practice this may be offset by new opportunities that the research facilitated by the software could generate in other areas.

Summary table

Table B-1: Summary

Business	Sophisticated space and satellite modelling software sales and support
Choice of UK	Linked to previous links with military in the US and need to support UK and international markets
Assistance from UKTI/EEDA/ feedback	UKTI support to identify regions in the UK and support from EEDA to identify property and in understanding the business environment
Effect of assistance	Not significant, but helpful
Benefit to clients	Significant benefits demonstrated to all clients through embedding software in their own products – also supports university activities and student training
Benefit to suppliers	None
Benefits to network	None

Business	Sophisticated space and satellite modelling software sales and support
Effect on competitors/market partners	No obvious competitors
Commitment to market	Medium – but probably necessary to support new sales in UK
Direct effects – the economic activity supported by the firm itself	Small direct effects
Direct market effects	Significant productivity benefits to clients – estimate savings to the RAF of £1m, secured £300,000 annual research grant for Dutch client, French client winning work as a result of software use, British client using embedded software in innovative new products. All cases appear to deliver major productivity benefits into public sector, specifically in defence contracts
Evidence of spillovers (horizontal and vertical)	Knowledge spillovers are fairly small. However, examples of using software in universities to improve teaching outcomes is possibly one
Direction of spillovers	Into the UK only – motivation is purely to exploit technology ownership advantage
Absorptive capacity	Dealing with niche market which is highly sophisticated and demonstrated through the embedding of complex software leading to innovation
Position in the supply chain	Supplier into UK-based businesses again supports hypothesis that FDI upstream is likely to be more effective in generating technology transfer and spillovers
Export-orientation	Some evidence that the firms benefiting most from using the software are likely to exploit it through international sales rather than just in the UK, although some of the public uses are limited to the UK.
Regional and spatial dimension	At first sight appears not to be geographically linked, but the choice of location is linked to customer base. It is not that the effects don't spread but that the business locates near those that will benefit
Demand for labour (skilled and unskilled) and influence on wages	No significant effects – software could reduce demand for some types of programming but also creates new opportunities through its use.

Source: SQW

Annex C: Global Engineering (UK) Limited

Overview

Company background

C.1 Global Engineering is a major engineering business based in Stockton in the north east of England. It is part of the Global Engineering ASA, headquartered in Oslo. The firm is a provider of engineering and construction services, technology products and integrated solutions. It has a presence in Aberdeen supporting maritime, subsea and hydraulics and in Portsmouth with plans to re-open its office in London.

C.2 The business has a long history in the north east. Prior to 2002, the business was owned by a Scandinavian construction group, which ran into major problems. It was taken over by Global which was able to bring some of its oil and gas work. Over time the Scandinavian company had sold off various parts of the original business, some of which remain in the north east.

C.3 In 2002 Global introduced what was a one stop shop for engineering contracting, however, this was not successful and the business struggled through to 2005, making a £50 million loss over the three years.

C.4 In 2005 the business brought in new management to Stockton. The number of employees had fallen from 2,200 to 500, mainly through transfers. Although the business stabilised in 2005, Global wanted to move the operation to the Far East, Beijing or Shanghai, to benefit from the growing nuclear market. The plan would have closed Global's operation in Stockton, losing 400 jobs and transferring 100 to the Far East.

C.5 The investment in 2005 was to retain the operation in Stockton. Support was provided by Teeside Development and ONE north east. ONE provided a grant of £1.4 million to buy new premises and also helped put together a business plan that pledged to generate 250 jobs. The plan convinced Global to retain the business in the north east and it invested a further £35 million in 2005. Since then it has grown rapidly, employing another 300 people and generating turnover of £110 million 2007/08 and an expected turnover of £125 million next year. It now operates with five strands:

- Nuclear
- Energy
- Metals
- Processing
- Water

C.6 The business provides engineering services for many of the major UK utilities and some relatively small scale overseas markets, particularly in metals. As a result of the intervention in remains a very important employer in what is a relatively disadvantaged area, supporting high quality white collar engineering jobs that would not otherwise be in the north east. It

also employs new graduates and has a wealth of expertise in the energy sector, nuclear in particular.

Motivations for investment in the UK

C.7 The motivation for the investment in the UK originally was to take over and build on the best bits of the Scandinavian company's business. The north east has a long history in engineering and still has a strong skills and experience base. Global invested £16 million in 2002 and a further £35 million in 2005. The main reason was the case made by the management, with ONE support, that the operation had a bright future in the UK. The alternative was that the Stockton operations would have moved completely out of the UK.

Market interactions

C.8 The breadth and scale of Global's operations make market interactions complicated. They are key contractors for some major investments in the UK and the testimony of a number of customers backs this up. They work closely with the Nuclear Decommissioning Authority at Sellafield and are part of a consortium working at Magnox North. The firm works with major energy utilities and with others in chemical processing and regional UK water utilities clients under framework contracts.

C.9 Most of this work is tendered at some stage, including a number of larger framework contracts, and it could be argued that if Global were not in the market, competitors would take this on. Many of these major projects also require consortia, so there are also strong links between them although they frequently would bid against each other. In the north east they are all represented within various network groups which work together on issues such as skills development, investment, productivity and marketing.

C.10 We understand that some of the contracts that Global has won are likely to have gone overseas if Global was not in the UK. Feedback from customers highlights one major contract that would have gone overseas otherwise, with what they considered to be an increase in risk and more difficult management. Also, the major British nuclear company considers that without Global there would have been some impact on their own programme as it would have left a significant gap in nuclear skills and capacity.

UKTI assistance

C.11 There was no assistance from UKTI in the 2005 investment, which was supported by ONE. However, there has been subsequent help to target overseas, including the Chinese market. The business plans to grow turnover from overseas markets in total to £25 million and the UKTI support has helped on the export side. The firm was very happy with RDA support did not consider that UKTI would have been able to provide much more.

Future development

C.12 The emphasis for growth is on expanding overseas sales and on the development of nuclear energy. Growth is expected to take turnover from £110 million to £125 million by the end of the next financial year. Global supports a training academy and plans to recruit more

graduates from in the north east. It continues to be hard to attract the right level of skills into the region.

Innovation and R&D

C.13 The business is involved in leading engineering practice, particularly around nuclear where the firm has a number of key national experts. The main example of R&D is the development of a new fusion-based energy technology that has been led by a Nobel winning scientist and is now being developed by Global in the UK. The project employs 8-10 people and at the moment is pure R&D although the IP is owned by the company. The relationship with the parent company also helps provide access to several other technologies including bio-mass developed in Finland and has been used for a major UK project. Most of the projects have more incremental process innovation with projects tending to be won on the basis of core engineering and contract management experience rather than entirely new solutions.

Suppliers

C.14 There were considered to be no significant supplier linkages. The firm estimated that it spends around £25 million with businesses in the UK with a much higher figure spent overseas. The biggest cost is employing agency staff (around 300 currently). The main components are sourced from overseas, often because they are not produced in the UK or to a high enough standard. There are much smaller purchases of office consumables, IT equipment etc. There are a number of relationships with a small number of specialists, but there is no evidence that Global's work has developed any new businesses and that most of this supply activity would have been delivered through competitors in its absence.

Customers

C.15 The UK contracts won by Global cover their five strands of business. The contracts will have been won for a variety of reasons, but its expertise and its base in the UK are important. These contracts are competitive and in most cases the work would have gone to one of the businesses listed in the following section, however, Global will in some cases provide a significant advantage.

C.16 The firm has provided some strong competition and some specific expertise. From the follow on consultations, one customer highlighted advantages of using Global as opposed to overseas competition where it was felt that the management risks would be higher.

Competitors

C.17 Global's competitors are other engineering firms, many if not most of which are foreign owned with operations in the UK.

Networks

C.18 Global's nuclear expert is a member of a UK government energy advisory panel and maintaining the experience within the firm and in the UK is also important. Global is also a member of a number of national and regional network organisations including:

- Nuclear Industry Association
- Energy Industries Council
- North East Process Industry Cluster (NEPIC)

C.19 Of these, the NEPIC is the most important in the north east and brings together most of the main process engineering operators in the region. The cluster operates through a number of groups and Global is a key company in the engineering supply chain heavily involved in the process engineering group which brings together site directors to produce cluster plans for skills, inward investment, productivity and marketing. Global is unlikely to share confidential material but it is part of a critical mass of engineering activity that is vital for the region.

C.20 As part of skills development Global has also supported Teeside University to set up an academy and training courses on customer relations. Global provides the lecturers.

Analysis

C.21 This section analyses the benefits of Global's presence to the UK economy. In this case, with relatively limited direct impact, we are interested in the wider spillover benefits that can occur and the mechanisms that cause them.

Direct effects

C.22 The investment of Global Engineering in 2005 of £35 million has had a major direct impact in the north east supporting now 800 jobs in a relatively disadvantaged area. It turns over £110 million a year. Without the investment some of these sales would have been captured by other businesses based in the UK but a relatively large proportion would have gone overseas, reducing employment and GVA. Specifically, the water contracts were likely to be taken by French based competitors, metal design work certainly outside the UK. Process work would have stayed in the UK and energy may have gone to Germany or Austria.

C.23 The R&D work on nuclear fusion development would not be in the UK and there would have been less input into networks both in the north east and nationally.

Direct market effects

C.24 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously. These benefits represent a productivity gain to the UK economy and can be substantial. These are not strictly spillover effects as they are traded in the market, but they still have a positive contribution to productivity.

C.25 Based on customer evidence there are certainly cases where contracts could have been delivered by UK based or other competitors with little noticeable difference. However, the work on the new bio-mass system (which would otherwise have been delivered by a company based overseas is reported to have provided benefits through both the technology (sourced from Global in Finland) and reduced risk as a result of Global's base in Stockton. Without them it would have cost more to manage process and these costs would be past on to

businesses on the site served by the generator. The partnership arrangements in delivering a number of the major contracts would be expected to offer customers (such as UK utilities) better value.

C.26 In the nuclear sector, the presence of Global has been important in retaining UK expertise in the civil nuclear programme, in which there is a supply-side constraint. Expertise could be sourced from overseas but at a cost and Global has a strong safety record.

Evidence of knowledge spillovers

C.27 Knowledge spillovers work through a number of channels (Girma et al 2007, Gorg and Greenaway, 2004). Spillovers are defined as benefits which accrue to UK firms for which the foreign firms are not compensated. Global are well integrated in the UK economy. The links and expertise have been built up through the Scandinavian group and the operation has strong ties in the sectors and the region.

Horizontal

C.28 These are intra-industry spillovers where domestic firms benefit from foreign presence in the same industry as their own. These require impacts on competitors and partners in the sectors in which Global operate. Unusually, the large contracts that Global work on mean that they both compete with and partner with businesses that might be considered competitors.

C.29 The main spillovers are through their involvement with Teeside University to support new graduates, and through a Memorandum of Understanding with Teeside Business School which aims at developing cross-training. Work with the nuclear industry at a national level, and participation in a number of network bodies in each of the sectors they work in. Global recently received an award for their contribution to the National Skills Academy for Nuclear and is involved in ensuring that the skills gap in nuclear technology is reduced. Global also plans its own Skills academy in the north east in the near future.

C.30 The partnering arrangements with other UK-based engineering groups would be expected to lead to exchange of practice and as a result enhance productivity. The nuclear work (where Global employs one of the sector's key experts) is also likely to provide spillover knowledge through participation in industry groups and his role on a Government advisory group. ACKtive Nuclear – a partnership between major British design consultancy and construction companies has won a gold award for health and safety (RoSPA 2008) for its work at Sellafield. It demonstrates industry leading health and safety management.

C.31 In the north east Global is a prominent member of NERIP cluster group and contributes with other major firms to the development of engineering and processing plans for the region.

C.32 The stronger spillovers appear to be in the sectors they operate in, through contributions to nuclear development, training and demonstrating good practice. These spillovers impact on both customers (vertical) and partners/competitors, many of whom are foreign owned but have major UK operations. There are fewer examples of spillovers for suppliers (most of which are overseas) or customers.

C.33 Finally, although in some cases their presence will largely displace competitors, it has an important competition effect, helping to reduce prices and drive up quality. In a relatively small market with high entry costs, competitive pressure depends on having a sufficient number of firms. Global contribute to this by reducing concentration. At the extreme, in the nuclear industry they provide capacity that might not otherwise be there at all in the UK.

Vertical

C.34 *Vertical spillovers* flow from foreign firms to industries or sectors other than their own. These effects come mainly through a result of buyer-supplier and customer linkages and are restricted here to knowledge spillovers. We have excluded what we called the direct market effects that are created through the provision of better or lower cost products and services to customers, which are described in the previous section.

C.35 For customers there is a thin line between what is and is not considered within the contract price and what might be considered a spillover. For example the Global work at Sellafield provides a great deal of knowledge and learning for future use by the customer NDA. While this is paid for within a market, there is likely to be knowledge accrued by DNA through the contract that was not envisaged at the start.

C.36 The impact of links with suppliers is more limited. There was not considered to be any significant spillovers for suppliers beyond the business that it brought. A large proportion of procurement for Global and on behalf of its clients is done globally.

Direction of spillovers

C.37 The relative impact of FDI is often assessed against the traditional hypothesis that foreign firms that are motivated by 'ownership' advantages by way of technology and management expertise will invest in FDI which will then be an important mechanism for transferring technology to firms in the host country in question. However, the literature also highlights evidence of 'technology sourcing' (Griffith et al 2004).

C.38 In this case, Global does bring some new technology and management expertise through its global activities and research, but the history of the operation means that it is well embedded in the UK and operates largely autonomously. There is no evidence of a reverse spillover, but equally, beyond the nuclear fission project, little evidence of new technologies being brought in. In respect of Driffield's matrix of motivation for investment it is neither sourcing technology nor using a specific technology advantage.

Absorptive capacity

C.39 The literature raises the importance of absorptive capacity as an important factor in spillover effects. Although the north east may appear to have less absorptive capacity in engineering, there is a cluster of major firms. For skills there are some limitations in attracting the right people to the north east. However, many of the possibilities of spillovers are UK wide into the utilities, competitors and public sector and hence the issue of regional absorptive capacity is less important.

Position in supply chain

C.40 Another hypothesis is that the FDI's position in the supply chain impacts on the extent to which productivity gains can occur. Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant.

C.41 The logic of this would largely hold in this case. Global operates predominantly as an engineering services provider to major utilities in the UK and major water and energy businesses. With relatively little supplier impact, Global competes to offer services, improving competition and offering a number of selling points that improve client productivity. It makes sense from this case to expect that those buying the services in a competitive market will benefit while the impact on suppliers is more adverse with the global buying power of Global likely to squeeze margins.

Regional and spatial dimension

C.42 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI. The scale of Global's operations and its geographical scale mean that the spillovers will be fairly widely spread. However, the local activities through the planned Skills Academy and links with the Teeside Business School will enhance skills mainly within the region. The contribution to the national skills academy for nuclear and to various industry groups will be national.

Demand for labour (skilled and unskilled) and influence on wages

C.43 The impact on demand is stronger for skilled labour than unskilled. 40% of Global's directly employed staff are graduates. The firm is involved in the national skills academy and in local initiatives because of the difficulties in recruiting skilled staff generally and in the north east specifically. This will have some knock on effect for other competitors in the UK, but the provision of training is expanding the market and without the investment some work would be lost abroad.

C.44 The demand for unskilled labour is unlikely to be significantly affected as many of the major construction projects will require unskilled labour on site that would be needed anyway, no matter who the contractor was.

Summary table

Table C-1: Summary

Business	Large engineering services business in the north east
Choice of UK	Take over in 2002 to build on existing UK presence and key markets. Encouraged to make major investment in 2005 rather than move to far east
Assistance from UKTI/Think London/ Feedback	No UKTI support, but RDA support was critical to retention and subsequent expansion of business..
Effect of assistance	RDA support led to £35 million investment and subsequent growth of business

Business	Large engineering services business in the north east
Benefit to clients	Operates in five markets – biggest effects in nuclear, energy and metals where work most likely to go abroad
Benefit to suppliers	Limited and possibly negative as global buying power makes use of international suppliers more likely
Benefits to network	Significant participation in NE processing cluster, national contribution to nuclear policy, development of skills academy and participation in national associations, link with Teeside Business School
Effect on competitors/market partners	Will substitute for some competitors directly, but also benefits through partnerships for major utility contracts. Competitors are nearly all foreign owned in engineering sector in this market
Commitment to market	High. History of the firm through previous ownership means that it is well embedded in the UK (also through oil and gas) and in the north east
Direct effects – the economic activity supported by the firm itself	Major direct effects supporting 800 mainly high quality jobs locally in a disadvantaged area (turnover of £110 million)
Direct market effects	Contracts are for major UK utilities and public sector and evidence that working with UK- based suppliers has advantages over overseas. Has retained significant nuclear expertise in the UK
Evidence of spillovers (horizontal and vertical)	Knowledge spillovers through demonstration of good practice (Nuclear awards) joint projects (although usually international), provision of skills support will strengthen industry generally and engagement of university and cluster activities will all contribute to productivity in the sector generally. Vertical effects more limited (no major effects on suppliers) – spillovers with customers are likely through long term engagement of expertise (but partly paid through)
Direction of spillovers	Neutral, long term involvement means that there is little technology advantage and rationale is through exploiting existing business strengths
Absorptive capacity	Although the north east may appear to have less absorptive capacity in engineering, there is a cluster of major firms. For skills there are some limitations in attracting the right people to the north east. However, many of the possibilities of spillovers are UK wide into the utilities, competitors and public sector
Position in the supply chain	Mainly sell to major utilities and the public sector, in water, energy and nuclear, processing is into major international businesses and metals is largely international. Supports literature that spillover and technology transfer is more likely to be achieved where FDI's sell into "domestic" businesses
Export-orientation	This is an international engineering market and the opportunities for spillover do appear stronger where these advantages can be used for exporting. However, in this case the, contracts are for UK utilities who are not exporting.
Regional and spatial dimension	The scale of the operation means that the benefits accrue across the UK and not just restricted to the north east, although some of the specific engagement in cluster work and training is local
Demand for labour (skilled and unskilled) and influence on wages	Impact on skilled labour demand rather than unskilled which would be maintained.

Source: SQW

Annex D: Internet Advertising (Europe) Limited

Overview

Company background

D.1 Internet Advertising (Europe) Limited (IA) is a wholly owned subsidiary of IA Technologies, an Indian owned company established in 2004 with global operations in the UK, USA, Hong Kong, Singapore and India. It is based in Hyderabad and has 400 employees and is listed in the Bombay Stock Exchange.

D.2 IA Technologies is a major player in telecoms and online advertising, developing the kinds of systems that let users use VoIP (voice over internet protocol) to communicate across the world. They describe themselves (Annual Report, 2008) as a 'high capacity, highly scalable server firm' offering services such as Internet Advertising Tracking Tool, Instant Messaging, Short messaging, Net Telephony, Global Content Delivery, Video Streaming, Social Networking, File Sharing and Downloading and Gaming. It also offers mass monetisation through its global internet advertising business IA Europe. Other subsidiaries of IA Technologies are in the USA and Singapore.

D.3 IA Technologies has invested around $50 million to build internet infrastructure and set up server farms at Stratford in the UK and in Hong Kong. It also recently acquired Reuters London, a UK based high-end data centre infrastructure which will be used to set up server farms by upgrading network equipment, and plans to invest £3-£5 million. As of September 2008, the capacity of their server farms included storage space of approximately 2 Petabytes and bandwidth connectivity of 2 Gigabytes per second.

D.4 IA itself was set up in the UK in 2005. It monetizes web traffic through Internet Advertising, using banner ads, pop-ups and video aids. IA is IA Technologies' own proprietary, in-house developed internet advertising tracking tool. It provides targeted online advertising campaigns, generating measurable consumer exposures, leads and sales based on end-to-end tracking. IA also acts as the European marketing arm of the IA Technologies Group.

D.5 IA's advertiser clients have increased from 3500 in year 2005 to 14,000 in year 2008. Its publisher network has increased from 2500 in 2005 to 8000 in 2008. Their publishers include third party internet properties, including web portals, category specific content website, general commerce websites and desktop marketing application. IA's advertisers and publishers are spread across fast moving, high growth internet geographies such as the USA, UK, China and India. The company earns revenues based on the number of Internet-user impressions, leads, sales or other actions that these advertisements generate. The Company collects fees from advertisers for channelling their ads to relevant websites and passes 77% to 80% of the fees to the site owners. Majority of revenues are derived from pay per impression model.

D.6 The current country manager for IA had worked in IA Technologies since its inception after which he had set up the Singapore operations six years ago and the UK operations in 2005. He presently heads the London-based server farm and coordinates with India, Hong Kong,

USA and Singapore offices for technical support. IA currently has four full-time employees in their offices in Canary Wharf, but plan to expand shortly. A majority of the business decisions are taken by the country manager in the UK.

Motivations for investment in the UK

D.7 The decision to invest in a wholly owned subsidiary in the UK was made based on several factors:

- To have a presence in the UK and other European markets in line with IA Technologies' expansion plans
- To take advantage of relatively low internet bandwidth costs in the UK, as most businesses are internet users, compared to India, Singapore and Hong Kong
- To provide a gateway to other markets and products

D.8 The decision to locate the business in London was initially taken with the intention of acquiring an AIM listing and then eventually be close to their acquired data centres.

D.9 IA Technologies directors met with Think London/UKTI in March 2005 to discuss potential opportunities. IA Technologies were encouraged by that meeting and the help that they received made their decision easier and swifter. They set up the office in October 2005.

D.10 IA are of the view that the advantages identified at the start of the set up have all been realised.

UKTI assistance

D.11 IA Europe views their support as having come from UKTI and Think London, although the initial contact was with UKTI. A senior executive, who handled the set up of the London office, confirmed how useful the support from both agencies had been. UKTI provided vital assistance in sorting out visa issues and helping with the more personal aspects of an individual moving to a new country. They also assisted the firm by providing information about local markets, suppliers and customers, and help with relocating staff from India. IA had approached Think London when acquiring the new data centre which took them to a reliable agent and helped broker a good deal.

D.12 The support was intensive in the first and second years of operation. IA Technologies had learnt their lessons from the mistakes they had made when setting up office in Singapore where they had not approached any government agencies for help or information.

D.13 Although all the current employees in IA have relocated from India, it is anticipated that there will be further employment from local markets, as the firm expands its operations in the UK.

D.14 IA/IA Technologies plans to have representation in other European countries in a year's time. They will need customer and supplier contacts for a new project and anticipate seeking help from Think London/UKTI to allow them to proceed quickly.

D.15 The support was therefore considered to be vital and important and it would be fair to conclude that although the support provided by UKTI was not wholly additional, it helped the investment in the UK to be brought forward and to accelerate IA Technologies' decisions to locate in the UK, and smooth the process of setting up the London office.

Innovation and R&D

D.16 As at 1st September 2008 over 120 of IA Technologies' employees – spend all of their time in the research and development of new products and services and improvements to our current products and services. They have a patent pending in the United States with respect to how they continue to track their advertising on one of their products. There is a commitment to devote substantial resources to keeping up with, and exploiting, changes in Internet and e-commerce opportunities. The costs of investing in R&D are included in the costs of fixed assets, according to the company's annual report and accounts.

D.17 There is no current impact on innovation and R&D as a result of this investment. IA confirmed that all hardware and software development currently takes place in India. On the other hand, the new acquired data centre will be upgraded in the future to support more racks and servers. Also, the provision of services by IA differs from project to project and can be sometimes quite distinct to those offered elsewhere. IA Technologies acquires the portal and IA provides the servers.

D.18 The firm has no dealings with universities or RTOs at present as they have not yet felt the need to do so.

Suppliers

D.19 IA has a number of suppliers in the UK that provide internet bandwidth and data centre facilities. They estimated that the value of purchases from the UK to be around £15 million. They tend to choose their suppliers based on cost factors.

D.20 A key supplier is a UK branch of a major Indian communications company, which itself is part of an Indian owned global conglomerate. The firm supplies IA with hosting and co-location, i.e. the space and infrastructure to hold servers in their data centres such that they can connect to IA's main frame computers which allows them to do their core business. The Indian communications company provides connections between London and Hyderabad in India via big cables and networks. The firm also provides Voice connections as they are the only carrier that has their own under sea cables. They are focused on emerging markets at present, having bought a stake in a China company and in a large South African company.

D.21 The company was set in the UK around 10 years ago and employs 100 people. The UK branch also supplies to IA Technologies and its other subsidiaries and therefore not exclusive to IA.

D.22 The UK branch indicated that IA has been able to bring them revenues to the tune of £1.5 million. They noted IA as an extremely valuable customer.

Customers

D.23 IA has a wide variety of customers; a majority of these are overseas or global customers. IA does not currently engage in exports of its products as such but most customers are online businesses. It has around 14,000 publishers as customers, including big names.

Competitors

D.24 IA competes against entities that engage in various forms of performance advertising and Internet tracking such as websites, portals and search engines that offer performance advertising solutions for their own and third-party use.

D.25 IA cited their main competitors as global multinational companies. IA Technologies has recently teamed up with a major internet player to power its own branded phone, with voice, real time video, and video on demand. IA does not believe that there are any UK specific competitors to their business.

Networks

D.26 At present, IA is not part of any business networks.

Analysis

D.27 This section analyses the benefits of IA's presence to the UK economy.

Direct effects

D.28 As at 31st March, 2008, the total investment in IA Europe was £18.7 million and the total turnover was approximately £20 million. The 'IA' product contributes up to 80% of IA Technologies' revenues.

Direct market effects

D.29 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously. These benefits represent a productivity gain to the UK economy and can be substantial. These are not strictly knowledge spillover effects as they are traded in the market, but they still have a positive contribution to productivity.

D.30 Sourcing cost-effective bandwidth has enabled IA to be more competitive in the market place. The resulting growth in profitability can go back to the core business and enable investment in R&D and more sophisticated technologies.

Evidence of knowledge spillovers

D.31 Knowledge spillovers work through a number of channels (Girma et al 2007, Gorg and Greenaway, 2004). Spillovers are defined as benefits which accrue to UK firms for which the foreign firms are not compensated. In this case spillover effects will come not from new R&D or processes, but through the exploitation of new relationships and access to networks for UK

firms that would not have been possible otherwise. These spillovers can be horizontal, through competition and demonstration effects or vertical, impacting on domestic firms outside the sector such as clients or suppliers.

Horizontal

D.32 These are intra-industry spillovers where domestic firms benefit from foreign presence in the same industry as their own.

D.33 In the case of IA, this is difficult to observe as they are relatively new (three years old) and a majority of their competitors are global and multinational firms.

Vertical

D.34 *Vertical spillovers* flow from foreign firms to industries or sectors other than their own. These effects come mainly through a result of buyer-supplier and customer linkages and are restricted here to knowledge spillovers. We have excluded what we called the direct market effects that are created through the provision of better or lower cost products and services to customers, which are described in the previous section.

D.35 Although IA believes that their presence had led to the attraction of new suppliers in the UK market, one of their existing key suppliers is a large global player who cited no evidence of knowledge spillover effects as a result of their interactions with IA. The supplier had not had to make any changes to their products and services or management practices as a result of IA.

D.36 IA is open and flexible to customer needs and often tailors their requirements accordingly. They can afford to be competitive as they are able to exploit the relatively cheaper internet bandwidth in the UK. The acquisition of the new data centre has enabled them to lease the infrastructure and server space to a larger customer base. This could mean more and better choice for customers wishing to operate from the UK.

Direction of spillovers

D.37 The relative impact of FDI is often assessed against the traditional hypothesis that foreign firms that are motivated by 'ownership' advantages by way of technology and management expertise will invest in FDI which will then be an important mechanism for transferring technology to firms in the host country in question. However, the literature also highlights evidence of 'technology sourcing' (Griffith et al 2004).

D.38 It is not evident from the discussions undertaken as part of the case study that there has been any 'technology sourcing' in the case of IA. They appear to have some advantage by way of technology with regard to internet advertising and tracking, and the provision of large server farms hosted in data centres.

Absorptive capacity

D.39 The literature raises the importance of absorptive capacity as an important factor in spillover effects. In this case, the absorptive capacity of the ICT sector in London would be assumed to be very strong and any competitive or demonstration effects would be expected to work

through rapidly. IA's suppliers, customers and competitors tend to all operate in the high-tech sector and it can be assumed that their absorptive capacity in general terms is strong. However, in the absence of any strong evidence on spillover effects on suppliers or customers, we cannot be certain as to whether the regional absorptive capacity was sufficient to benefit from IA's presence in the market..

Position in supply chain

D.40 Another hypothesis is that the FDI's position in the supply chain impacts in the extent to which productivity gains can occur (Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant).

D.41 This is unlikely to be true for IA as a majority of their customers are global online businesses which may or may not operate from, or repatriate benefits to, the UK.

Regional and spatial dimension

D.42 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI. There is little in this case to support or contradict this, although it is interesting to note that the majority of IA's UK's activities will be within London and the South East, close to their data centres in Stratford and London.

Demand for labour (skilled and unskilled) and influence on wages

D.43 The case study does not provide any evidence on this. All current staff has been sourced from India, although there are plans for further recruitment, potentially from local UK markets. Employees are educated to degree level or equivalent. There are some accountants that are sourced locally as and when required.

Summary table

Table D-1: Summary

Business	It monetises web traffic through internet advertising. It provides targeted online advertising campaigns, generating measurable consumer exposures, leads and sales based on end-to-end tracking.
Choice of UK	Low cost internet bandwidth
Assistance from UKTI/Think London/ Feedback	Support was strong in the first two years; mainly help with visas and finding office space in London, also generating contacts
Effect of assistance	Allowed smoother and swifter start to operations
Benefit to clients	A player using the low-cost bandwidth to supply cost competitive solutions to customers
Benefit to suppliers	A player that has spent approx £15 million sourcing supply to date
Benefits to network	No evidence
Effect on competitors/market partners	No evidence
Commitment to market	Judged to be high; UK subsidiary set up in the UK with the intention of

Business	It monetises web traffic through internet advertising. It provides targeted online advertising campaigns, generating measurable consumer exposures, leads and sales based on end-to-end tracking.
	serving European markets and exploiting the low cost bandwidth
Direct effects – the economic activity supported by the firm itself	Investment of £18 million and turnover of £20 million; 4 employees who are all from India but plans for expansion and recruitment locally
Direct market effects	Sourcing cost-effective bandwidth has enabled IA to be more competitive in the market place. The resulting growth in profitability can go back to the core business and enable investment in R&D and more sophisticated technologies.
Evidence of spillovers (horizontal and vertical)	No evidence on horizontal spillovers as similar companies in the same sector are also large, multinational players Sparse evidence of vertical spillovers although IA believe that their presence has resulted in new suppliers. The acquisition of the new data centre has enabled IA to lease the infrastructure and server space to a larger customer base. This could mean more and better choice for customers wishing to operate from the UK.
Direction of spillovers	More technology leadership
Absorptive capacity	Should be sufficient given the ICT cluster in London and the South East
Position in the supply chain	No evidence; customers tend to be global online businesses and not specifically from the UK
Export-orientation	None
Regional and spatial dimension	Majority of IA's activities are in London and the South East close to their data centres.
Demand for labour (skilled and unskilled) and influence on wages	None at present but potentially for the future

Source: SQW

Annex E: Pet Food Limited

Overview

Company background

E.1 Pet Food Limited (PF) is a subsidiary of a major French pet food manufacturer, AAF (which is itself part of a multinational food group). AAF was founded in 1967 by a French vet to be a provider of specialist pet foods aimed at the medicinal and high performance areas of the market.

E.2 AAF is the European leader and one of the world's largest manufacturers of premium pet food products, specialising in dry food products for dogs and cats. The company produces more than 40 types of dry dog food and 20 types of dry cat food, developed for a range of breeds, ages, weights and sizes. AAF's products are sold direct to vet surgeries and through specialist retailers, thereby avoiding competition with the lower priced pet foods offered in supermarkets. AAF manufactures its pet foods in nine countries worldwide (including the UK) and has a total workforce of over 3,000 employees.

E.3 In 1999, AAF bought PF in the UK and followed this by acquiring WB the following year. WB specialised in hypoallergenic products i.e. the medicinal side of the market whereas PF concentrated on breed specific high performance feed. The operations were consolidated on to a new site in Castle Cary (Somerset) in December 2007 under the PF name. PF employs 87 people on-site in Castle Cary plus a further 81 people in the national sales team.

E.4 The new factory in Castle Cary, or more specifically the odour emissions generated by the preparation of the dry pet food products (known as kibbles), led to local protest. As a result, PF reduced production of the most pungent products for a period of nine months whilst they installed state of the art filtering equipment. Full production recommenced in September 2008.

Motivations for investment in the UK

E.5 AAF were keen to enter the UK as it is Europe's leading pet food market but were looking to acquire manufacturers in the same sections of the market as themselves. The choice of Somerset stemmed from PF being based in Yeovil. The acquisition of PF and WB has allowed AAF to achieve the number three position in the UK. The UK market for dry pet food was worth a total of £573 million in 2007[9].

UKTI assistance

E.6 The current team at PF are recent to the firm and hence were not involved in the original move to the UK. They were not therefore able to comment on UKTI assistance. The closest public sector relationship has therefore been with the economic development team leader at South Somerset District Council.

[9] Pet Food Manufacturers' Association

E.7 PF states that it has found the advice from the Council invaluable as their contact has helped them to develop a 'hearts and minds' campaign to win over local residents. This has involved holding regular consultation meetings, providing newsletters and holding an open day once the new filtering equipment was in place. As a result, dissent has abated and PF is now producing pet food at full capacity.

Future development

E.8 The opening of the new plant and the additional expenditure on the filters demonstrate PF's commitment to building its presence further in the UK. They recently set up in Poland at a fraction of the cost of the Castle Cary plant but consider the UK market to be so important that they need a manufacturing site here. In order to demonstrate their commitment to the local community as well as meeting a genuine need for new employees, PF is sponsoring three apprenticeships, taking on young people from local schools.

Innovation and R&D

E.9 Although the development of products new to the AAF group takes place at their R&D centre in Southern France, PF has been responsible for introducing innovative pet food products to the UK market. The latest move has to been to introduce breed specific performance foods as well as foods designed to lower pet obesity (a recent key trend in premium pet food manufacture).

E.10 PF's other innovative step has been the introduction of the odour suppressing filters, albeit that they were forced into this development by local pressure. PF uses APP (Applied Plasma Physics) whereby air emitted from the pet food cooking process passes through 200 tubes and is bombarded with high energy electrons which break down odours. APP has been evaluated as Best Available Technology by the EU Integrated Pollution and Control Bureau. The filtering system cost £1 million and PF believes it is the first pet food manufacturer in the UK to employ this technology.

Suppliers

E.11 PF has no specific food suppliers but sources its ingredients on the world commodity markets. They admit that rising commodity prices are a worry.

E.12 The other key supply need is transport to take their products to end users/sales outlets. For this they use a local haulage firm who have increased their number of drivers from six to 20 in order to accommodate PF's needs.

E.13 Other interactions with local suppliers include the lease of 90 company cars, the use of a local cleaning company (for laundering of protective clothing), the hire of hotels/caterers for meetings and other functions and the use of local professionals (solicitors, accountants, surveyors).

Customers

E.14 PF's customers fall into three main categories:

- breeders and other canine/feline professionals
- vets surgeries
- independent small outlets.

E.15 One of PF's customers, a south west vet, reported that they stock its products predominantly because of their palatability to animals. PF also has the benefit of being highly innovative and providing good customer service.

E.16 PF's products fall into the category of prescription only medicines (POMs), prescribed to dogs and cats when they need to change to a specialist diet. The vet surgeries sell these products to the pet owners direct and like them because they can achieve higher margins than with ordinary dog and cat food.

Competitors

E.17 PF's biggest competitor is a US pet nutrition company which competes directly in the same market for specialist pet food and is regarded as the market leader. Other major competitors are the specialist nutrition entities within major Swiss and US pet food companies.

E.18 The south west vet reported that the US nutrition company achieved its leading position in the UK premium pet food market 20 years ago by sending £400 of free pet food to each of the 4,000 vet surgeries in the UK. As a result, it took them five years to break even in their UK business but 90% of vet surgeries stocked their products. PF has had to break in on this but is managing to do so due to the greater palatability of its foods. It is also worth noting that US company has no manufacturing capability in the UK and imports all its products from the US.

Networks

E.19 PF plays an active part in networks on both a professional and community basis.

E.20 PF is a member of the Pet Food Manufacturers Association (PFMA), the principle trade body for the sector with 56 members covering 90% of the pet food market. PF has been a member of the PFMA for around three years and the Association reports that they are active members, particularly of the Veterinary Nutrition Committee through which they provide nutritional expertise. A representative from PF also sits on the Communications Committee and is helping develop the PFMA's campaign against pet obesity.

E.21 At the point they moved to Castle Cary, PF joined the South Somerset Chamber of Commerce. They have been an active member taking part in events and speaking at meetings on economic development and inward investment. PF has also included other Chamber members in their supply chain for professional services. In more general terms the Chamber are pleased to have PF as a member as it constitutes one of the larger companies in the sub region with a different outlook to that of smaller companies.

E.22 In terms of community involvement, PF supports a number of local charities and, as mentioned above, is working with local schools to encourage students to come forward for apprenticeships. The company is also feeding its requirements to local FE colleges in order to make training courses more relevant to their needs.

Analysis

E.23 This section analyses the benefits of PF's presence to the UK economy. It considers both direct effects and those relating to spillovers.

Direct effects

E.24 PF accounts for 87 jobs in South Somerset and a further 81 around the UK. When it moved from Yeovil to Castle Cary, PF took the existing workforce with it and is now building on that base. PF is very committed to growing its business in the UK so the number of employees looks set to grow.

E.25 As PF begins to take market share from its main competitor this will provide an overall benefit to the UK economy given that it will increase manufacturing (and the need for skilled labour) at a UK site at the expense of a company that simply sells imported products.

Direct market effects

E.26 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously.

E.27 PF introduces new to UK products in its range and is viewed as more innovative than its main competitor. Its products can have a beneficial impact on their customers in the following ways:

- breeders – production of healthier cats and dogs that then command a higher price
- vets surgeries – increase in the range of nutritional feeds that can be prescribed for clients' animals and sold at a higher margin to non-prescription pet foods
- independent small outlets – increase in the range of products on offer, all of which can be sold at a premium to standard pet foods.

Evidence of knowledge spillovers

E.28 As discussed in the literature (UKTI 2006), knowledge spillovers occur when actions by one firm generate benefits which affect other firms but for which it is not remunerated through a direct market transaction. These spillovers can be horizontal, through competition and demonstration effects, or vertical, having a beneficial effect on domestic firms outside the sector such as clients or suppliers.

Horizontal

E.29 These are intra-sectoral spillovers where domestic firms benefit from a foreign presence in the same industry as their own. In the case of PF these spillovers are likely to occur through their active membership of the PFMA. The PFMA membership includes all PF's main competitors and PF's committee work provides opportunities for demonstration of their expertise. Whilst

they will not be revealing any commercial secrets, ongoing examples of their innovation are likely to encourage other PFMA members to 'raise their game'.

E.30 Another area where the demonstration effect may hold relates to PF's innovative filtration system. Given the increased emphasis on environmental issues and the fact that this filter system has been judged 'best of breed' by the EU, it is likely to become the standard in the UK. In fact, PF's overall approach to pacifying local dissent may become a best practice example to be used elsewhere by industry participants.

Vertical

E.31 Vertical spillovers flow from foreign firms to industries or sectors other than their own as a result of buyer-supplier and customer linkages and are restricted here to knowledge spillovers.

E.32 In the case of PF, their membership of the PFMA's Veterinary Nutrition Committee involves them providing nutritional expertise to their customer base. This is not immediately remunerated although it can act as a useful promotional tool for their expertise in the sector. The acquisition of this knowledge by the customer base will allow them to perform better and become more productive.

Direction of spillovers

E.33 As the literature points out, the relative impact of FDI is often assessed against the traditional hypothesis that foreign firms are motivated by 'ownership' advantages by way of technology and management expertise which they can exploit in new markets, thereby creating an important mechanism for transferring technology to firms in the host country in question. The example of PF bears out this traditional hypothesis in that their motivation in coming to the UK was clearly to exploit the market with what they regard as their superior form of pet food.

E.34 Additionally, the local Chamber of Commerce feels that having PF as a member is beneficial to their other members in terms of the management/international expertise that they can disseminate to smaller, earlier stage companies.

Absorptive capacity

E.35 Absorptive capacity is highlighted as a factor of interest in the literature. South Somerset has a comparatively high concentration of manufacturing companies. For instance, whereas the share of employment in the manufacturing sector in the South West region as a whole in 2005 was 11% (mirroring the national situation)[10], the share in South Somerset was 22%. Local FE colleges therefore provide a range of courses preparing young people to take on jobs in the sector.

E.36 PF has taken a pro-active approach to ensuring the necessary skills are available in the local area through its work with schools and colleges. PF's strong community involvement means that these opportunites are being viewed favourably and followed up (in contrast to the experience of another case study company in the region). This suggests that absorptive

[10] Cambridge Econometrics (2006)

capacity is not a static element but can be developed by a foreign owned company if it is willing to put in the effort.

Position in supply chain

E.37 Another hypothesis is that the foreign company's position in the supply chain effects the extent to which productivity gains can occur. Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant. This is likely to hold in the pet food sector where domestic firms (shops, vet surgeries) are purchasing from an industry with a high proportion of foreign investment. This is not only the case with PF but its key competitors are also all foreign owned. This means that innovative forms of pet food are constantly being introduced into the supply chain which should help to increase the productivity of end retailers/users.

Regional and spatial dimension

E.38 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI (Driffield, 2004; Girma and Wakelin, 2000). In PF's case this may hold for the demonstration effects of their management expertise. However, their customers and competitors are located through the UK and hence the impact on these groups will go beyond regional boundaries.

Demand for labour (skilled an unskilled) and influence on wages

E.39 Driffield et al (2005) found a positive impact of inward foreign direct investment on demand for *skilled labour* only, and that this rises when the investor has some technology advantage and no labour cost advantage. PF report they have an ongoing requirement for skilled labour. Their work with schools and colleges is aimed at meeting this demand although they are experiencing problems recruiting maintenance engineers.

E.40 As regards the 'bidding up' effect that the literature suggests that the presence of foreign investors has on labour costs, PF aims to offer a competitive package, including BUPA cover. This may be hard for smaller local manufacturing companies to match.

Summary table

Table E-1: Summary

Business	Manufacturer of specialist pet food
Choice of UK	Wished to exploit the important UK market
Assistance from UKTI/SWRDA etc/Feedback	Recent assistance from the local Council has been invaluable in helping PF cope with a major environmental issue (now resolved). PF is very appreciative of the support.
Effect of assistance	Resolution of the recent problem has allowed full production to recommence at the new factory.
Benefit to clients	Provision of innovative/higher quality products

Business	Manufacturer of specialist pet food
Benefit to suppliers	Not relevant
Benefits to network	Demonstration effects through membership of main trade association (PFMA)
Effect on competitors/market partners	Forcing the pace by introducing innovative products in a highly competitive market
Commitment to market	Very high – investment in new factory and development of apprenticeships
Direct effects – the economic activity supported by the firm itself	87 staff employed by PF in Somerset plus another 81 in the UK sales force.
Direct market effects	Performance gains for UK customers generated through the benefits of PF's innovative pet foods
Evidence of spillovers (horizontal and vertical)	Horizontal demonstration effects through networking in key trade body and through development of state of the art filtration system Vertical effects on customer base through the Veterinary Nutrition Committee of the PFMA.
Direction of spillovers	Positive spillovers for domestic companies caused by PF wishing to exploit is ownership advantage
Absorptive capacity	High in the sub region and being actively managed by PF.
Position in the supply chain	Good opportunites for productivity gains as domestic customers in the sector are mainly buying from companies such as PF that are foreign owned.
Export orientation	Not applicable given that the major UK industry players are foreign owned but serving a purely domestic market
Regional and spatial dimension	Some benefits are limited to the region but most are likely to occur UK wide
Demand for labour (skilled and unskilled) and influence on wages	Demand for labour is strong. PF is able to compete and offer a competitive package but this is likely to raise the bar for domestic employers.

Source: SQW

Annex F: Bearings Company UK

Overview

Company background

F.1 Bearings Company (Bearings) was established in Japan in 1939 as a manufacturer of industrial bearings. Bearings produces bearings for a variety of uses in the automotive, marine and general industrial sectors. It has also branched out into related areas such as rotary pumps, centralised lubrication equipment and motor pumps. Bearings has around 4,000 employees worldwide of which 185 are based in the UK.

F.2 In 1998, Bearings entered into a joint venture with a major US firm (the owner of a metals company in Ilminster in Somerset) to produce bearings in the UK. However, after a strategic review in 2001, the US company decided to sell the metals company and Bearings acquired 90% of the shares, renaming the company Bearings UK. In 2005, Bearings took the decision to centre its European headquarters at the Somerset site. Bearings also has operations in Montenegro, Stuttgart and the Czech Republic.

F.3 Bearings views itself as being a leader in the field of 'tribology', the technology of bearings (i.e. the physical and scientific analysis of friction, wear and lubrication). Machines always have parts that are subject to friction, making them susceptible to wear and tear. Bearings therefore established what it calls its 'tribological approach' by combining bimetal, surface treatment and precision manufacturing technology in order to address the friction based problems. It considers that it has developed a world reputation in this field.

Motivations for investment in the UK

F.4 By the 1990s, Bearings had gained a high percentage share of the Japanese bearings market. Thus the senior management considered it important to develop its business internationally in order to achieve further growth. Europe was seen as key area to target.

F.5 The initial presence of Bearings in the UK stems from the European Managing Director (EMD)'s enthusiasm for the country and his close relationship with the senior management in Japan. The EMD was an engineering trainee in England and he kept in touch with the UK market over the course of his career. Members of the senior management in Japan had also visited the UK on numerous occasions so considered that they had a 'feel' for the market here. The UK was therefore a logical place from which to develop a presence in Europe.

F.6 Bearings were satisfied with the progress of the joint venture and thus decided to increase their stake when the US company wanted to pull out. Without this additional investment by Bearings, the Somerset site would have closed, with a resulting loss of jobs.

UKTI assistance

F.7 Bearings's first interaction with UKTI was through the staff in the Japanese Post. Although the decision to come to the UK had already been taken (as a result of the joint venture

opportunity), UKTI provided useful information on the South West region and key contacts. This facilitated Bearings' move and allowed them to get on with doing business more quickly.

F.8 SWRDA's Sector Development Adviser keeps in regular contact with the company. Bearings UK recently had a problem with a work permit for an incoming Japanese senior manager. The SWRDA adviser managed to expedite the process and Bearings UK stated that they were impressed and grateful. The adviser is also currently looking into some planning issues relating to sale of excess land on the Bearings UK site.

F.9 However, Bearings UK's EMD considers that the Government could do more in the way of grants/tax breaks to encourage foreign investors to come to the UK and stay here. He feels that other countries are more generous in this regard. The situation is exacerbated by the fact that although Bearings' UK operation is small enough to be an SME, it is part of a larger group and therefore does not qualify for many of the benefits open to standalone SMEs.

Future development

F.10 Bearings UK's EMD continues to have faith in the UK as a manufacturing location despite, in his opinion, it no longer being viewed as one internationally. However, other members of the Bearings UK management team regard the firm's continuing presence in the UK as relying almost entirely on the strong relationship between the EMD and one of his senior management colleagues in Japan (a friend from university). This has recently led to the parent company providing a £1 million capital injection to fund a new plating line at the Somerset site. However, both the EMD and his senior Japanese contact are now past official retirement age and hence there is a question mark over Bearings UK's long term future in Europe given that it is currently loss making.

F.11 The situation is not helped by the complete absence of any integration between the Japanese senior management and the local UK workforce. This is not for want of trying on the part of the Japanese who have offered to support the UK staff in learning Japanese and tried to encourage some of them to visit the Japanese head office. These initiatives have not met with enthusiasm from the UK employees.

F.12 Bearings UK also find it hard to recruit suitably skilled English staff. This seems to stem from a combination of its remote location in South Somerset, a lack of UK based career opportunities given the small size of the UK operation and the fact that locally based skilled staff can earn more working for Westland in Yeovil.

Innovation and R&D

F.13 Bearings UK has an active R&D department involving three full-time researchers (one of which is British). They are currently working on a series of internal projects as well as sponsoring a PhD (at Leeds University) and post doctoral research (at Loughborough University). Bearings UK built these links themselves without outside support. Bearings UK consider their research to be new to the sector.

F.14 The work at Loughborough, for example, involves using a new form of electroplating on bearings. The process is not new to the UK but its application to bearings is innovative.

Loughborough report that they are highly satisfied with the link with Bearings UK as it produces a number of benefits. These include the real world benefit that comes from working with industry on a process that will have a direct commercial application as well as the direct financial income from Bearings UK (for use of laboratory facilities). An additional benefit is that they have been able to place one of their students in a job, i.e. the researcher working for Bearings UK in Loughborough's laboratories is one of their graduates.

F.15 The one drawback of Loughborough's metals department linking with a major company is that they can only do so with one at a time as the companies require exclusivity in order to be sure of commercial confidentiality. Some dissemination does take place, at least at an academic level, as Bearings UK publish the results of their research on a regular basis.

F.16 In terms of new product development, Bearings undertake the development and launch where most appropriate. For example, a product recently developed in the UK will be sold in the Japanese market. Likewise another new product recently developed in Japan will be sold in Europe.

Suppliers

F.17 In terms of Bearings' automotive business, all materials are provided by other companies in the Bearings group. In terms of the general industrial/marine business, the key raw material is steel. This is bought from stockholders in the Midlands but Bearings is viewed by these suppliers as a small customer and hence they cannot negotiate fine prices. In fact getting supplies at all can be difficult given the current demand from China for steel and the closure of steel making capacity in Europe. The stockholders are putting up their minimum order sizes but it is hard for Bearings to join up with other local companies on joint orders as their requirements are so specific.

Customers

F.18 On the automotive side, Bearings' key customers are major car manufacturers. They also supply spare parts distributors. The key market on the non-automotive side is spare parts for companies such as a leading diesel engine manufacturer. Bearings declined to provide contact details but said that they felt that as a UK entity they were such a small player in their various markets that they doubted that they had any impact on their customers (who source on a global basis).

Competitors

F.19 Similarly, Bearings' key competitors are huge, global players. On the automotive side they are the US companies such as Bearings UK's former owner. On the non-automotive side, the biggest competitor is a large German engineering company.

F.20 Whilst not a direct competitor in the manufacturing sector, Japtex could be viewed as a rival to Bearings UK in the area of tribology research. Japtex is the leading tribology diagnostics company in Japan. In 2005, Japtex signed a research and development contract with the University of Southampton. Japtex is sponsoring a PhD student for three years under the Professor of Surface Engineering and tribology. In 2006 Japtex opened a branch office in the

UK, to support the research contract, analyse the UK's market potential for Japtex's services and begin to develop business in the UK.

F.21 Both companies cited the UK's recognised expertise in tribology as their reason for pursuing the research links with British universities.

Networks

F.22 Bearings UK are a member of two relevant industry networks, the Engineering Employers Federation (EEF) and the Somerset and Dorset Manufacturing Network (SDMN). The former is a national organisation which aims to assist its members with issues relating to human resources, legal issues, health and safety, managing environmental responsibilities, training and development and also acts as a lobbying group. The SDMN is, as the name implies, a network of key public and private sector players in the manufacturing field in the South West (including the regional office of the EEF). Its aim is to disseminate best practice, match companies to R&D needs and foster joint working. Bearings UK feel that smaller companies gain most from this network but have continued their membership.

Analysis

F.23 This section analyses the benefits of Bearings UK's presence to the UK economy.

Direct effects

F.24 Bearings UK account for 185 jobs in South Somerset (100 direct manufacturing positions, 65 support staff and 20 staff in the European head office). In acquiring control of the metals company, Bearings UK retained some of these positions for the region and has built the workforce further since that point. These jobs would be lost if Bearings UK were to close.

Direct market effects

F.25 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously.

F.26 Bearings' tribological approach to bearings is intended to reduce the wear and tear on these essential elements in industrial machinery. This should allow their customers to keep their engines running for longer before they need to be repaired. This in turn should lead to productivity gains. Whilst Bearings UK's customers are all international names with production plants outside the UK, the spare parts providers Bearings UK sells to are likely to be UK based and hence the UK economy should experience some of the productivity gains produced by Bearings UK's technological expertise.

Evidence of knowledge spillovers

F.27 Knowledge spillovers work through a number of channels (Girma et al 2007, Gorg and Greenaway, 2004). Spillovers are defined as benefits which accrue to UK firms for which the foreign firms are not compensated. These spillovers can be horizontal, through competition

and demonstration effects or vertical, impacting on domestic firms outside the sector such as clients or suppliers.

Horizontal and vertical spillovers

F.28 The problem for Bearings UK is that whilst its Japanese parent may have some market clout, Bearings UK itself is too small to count. It is therefore most unlikely to be generating any demonstration or competition effects within the supply chain or with competitors. The 'ownership advantage' of its tribological approach is therefore more indirect, arising through the dissemination of the results of its research links.

Direction of spillovers

F.29 As the literature points out, the relative impact of FDI is often assessed against the traditional hypothesis that foreign firms that are motivated by 'ownership' advantages by way of technology and management expertise which they can exploit in new markets, thereby creating an important mechanism for transferring technology to firms in the host country in question. Bearings Japan's pride in its tribology approach was one of the motivating factors in it setting up in the UK to offer what it regards as its superior bearings to the European market.

F.30 However, emerging theory and evidence is beginning to suggest that it is not always a case of positive externalities from inward investment flowing from foreign firms to host country firms. In fact, the motivation to invest in FDI may be related to the foreign firm's desire to 'source technology' from the host country, resulting in 'reverse spillover' effects from domestic to foreign firms. For instance, research by Whyman and Bainbridge, (2006) found that the key determinants of FDI included 'resource seeking' by investors looking to find particular resources, technologies and production methods in the host economy.

F.31 Bearings UK has pursued research links with UK universities in order to unlock the tribology expertise for which the UK has a global reputation. This is borne out by another Japanese company also locating in the UK to develop a research contract with a UK university that excels in this field. Whilst this is a form of technology sourcing, it can be viewed in a more positive light than the reverse spillover effect whereby a foreign investor gains more from its contact with domestic firms than the economy gains for the FDI's presence. Bearings UK's research links also convey benefits to the UK universities in the form of income for the institution and employment for their students. Further, with Bearings UK committed to the UK (at least whilst their EMD remains in post) there should be opportunities for the new technology developed to enter the supply chain and potentially create positive horizontal or vertical spillovers in the future.

Absorptive capacity

F.32 Absorptive capacity is highlighted as a factor of interest in the literature. Viewed from the outside as a largely rural county, Somerset might appear to have little absorptive capacity for advanced manufacturing. However, as the Economic Development Team Leader from South Somerset District Council was quick to point out, South Somerset has a comparatively high concentration of manufacturing companies. For instance, whereas the share of employment

in the manufacturing sector in the South West region as a whole in 2005 was 11% (mirroring the national situation)[11], the share in South Somerset was 22%.

F.33 However, set against this, the manufacturing for which the sub region is known mainly centres on civil aviation and the defence industries (led by Westland in Yeovil) rather than the automotive and marine focus of Bearings UK's bearings. Perhaps more importantly in Bearings UK's case is the lack of rapport between the UK workforce and the Japanese senior management. This has led to the UK employees not taking up the upskilling opportunities offered by the Japanese.

Position in the supply chain

F.34 Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant. However, Bearings UK's weak position in the supply chain provides little obvious prospect of domestic productivity gains apart form the effects on spare parts companies already discussed.

Regional and spatial dimension

F.35 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI. However, Bearings UK's case does not fit this hypothesis. Its most obvious area of spillover, the R&D links it has formed, are with universities well outside the South West region. Likewise any vertical spillovers generated with spare parts customers will be with companies spread around the UK.

Demand for labour (skilled an unskilled) and influence on wages

F.36 Driffield et al (2005) found a positive impact of inward FDI on demand for *skilled labour* only, and that this rises when the investor has some technology advantage and no labour cost advantage. Bearings UK state they have an ongoing requirement for skilled labour. However, their small size means that they cannot offer the same career prospects and salary levels as other manufacturing firms in the region.

F.37 Bearings UK also only indirectly contributes to the hypothesis discussed in the literature that the presence of foreign firms in the market can lead to 'bidding up' of wages. Bearings UK themselves are not out bidding the market but the fact that they and other manufacturing firms are looking to source skilled labour from a relatively small pool helps to keep wage levels high.

[11] Cambridge Econometrics (2006)

Summary table

Table F-1: Summary

Business	Manufacture of industrial bearings
Choice of UK	Base to pursue opportunites in the UK and European markets
Assistance from UKTI/SWRDA/Feedback	UKTI provided info on South West region and facilitated the move to the UK. SWRDA have provided support in a number of areas on an ongoing basis. This support is much appreciated.
Effect of assistance	Allowed Bearings UK to get on with business more quickly. Ongoing support has smoothed out difficulties.
Benefit to clients	Tribology technology reduces wear and tear and hence improves productivity
Benefit to suppliers	Bearings UK too small to have an impact
Benefits to network	Potential for knowledge dissemination
Effect on competitors/market partners	Too small to have an impact.
Commitment to market	Strong at present due to current EMD. Likely to be lower when he retires.
Direct effects – the economic activity supported by the firm itself	185 staff employed by Bearings UK at their Ilminster site.
Direct market effects	Productivity gains for UK based customers generated through the benefits of Bearings UK's tribology technology
Direction of spillovers	Two-way spillovers due to R&D links bringing benefits to both Bearings UK and the relevant universities
Absorptive capacity	High in the sub region but low in Bearings UK itself due to lack of rapport between Japanese management and English employees.
Position in the supply chain	Weak
Export orientation	Bearings's market is a global one so export orientation is high both for Bearings and its customers
Regional and spatial dimension	Any impact will be felt beyond the region due to extra regional R&D and customer links.
Demand for labour (skilled and unskilled) and influence on wages	Demand for labour is strong. Competition for employees likely to be keeping wages relatively high.

Source: SQW

Annex G: Biotech Research UK

Overview

Company background

G.1 Biotech Research (Biotech) UK is based in Newcastle and is a subsidiary of Biotech Research, a Canadian based biotechnology research company employing a total of 19 staff in Canada and the UK. Biotech was founded in 2001 to specialise in the research and development of mitochondria DNA (mtDNA) in order to design tests for the early detection of cancer. The company's core technology is directed at locating biomarkers to enable early detection and characterisation of cancer providing an opportunity for early screening and better prognostic indicators. In 2007, the company was voted as one of Canada's top ten life science companies by an expert panel of Canadian and US venture capitalists.

G.2 The company has advanced four main products that are ready for commercialisation:

- Skinphysical - a consumer skin health test which quantifies the level of DNA damage caused by ultraviolet radiation (UVR);
- DNA care: a technology that enables them (Biotech) to assess the ability of sunscreens and/or skin care products to protect against DNA damage resulting from UVR exposure;
- BIOPSY+: a clinical test for men who have undergone a prostate biopsy that were diagnosed negative for cancer. This product will provide an additional measure of assurance that a tumour was not present;
- Genescreen: a consumer test to identify skin type assisting consumers to make decisions on their sun protection and sun lifestyle habits.

G.3 In 2004, Biotech UK started operating from an incubator laboratory managed by CELS (Centre of Excellence for Life Sciences) in Newcastle University's Medical School. The UK company currently has three employees – a part-time Managing Director, who is also a University employee, a full-time R&D officer and a part-time research assistant. The company previously employed a Business Development Manager to investigate investment opportunities in the UK. However, this approach proved to be unsuccessful and all business development activity is now undertaken by the Canadian office.

G.4 The motivation for setting up this UK subsidiary came as a result of a chance meeting between the former Chief Executive of Biotech and a Professor from Newcastle University at an international conference in 2002/03. At this point there was very little research being undertaken (anywhere in the world) in mtDNA and when the company realised that the Professor was involved in the same area of research they were keen to access his assets and Intellectual Property.

G.5 Biotech's business model is consistent across the two operations (in Canada and Newcastle). The difference is that the operating and management team is based in Canada and this is

where all key decisions on strategy and business development are taken. Only R&D is currently undertaken at the Newcastle facility. However, staff at this site are able to define research projects and budgets. They also have the autonomy to recruit additional staff if required.

Motivations for investment in the UK

G.6 The decision to set up a facility in Newcastle came about after a chance encounter between Biotech and the Newcastle University Professor. The main driver to set up a facility in Newcastle was to be able to access the specific expertise of the Professor of Molecular Dermatology at Newcastle University. Consequently there was never any consideration of investing in another UK region or country.

G.7 Since setting up in Newcastle, Biotech has subsequently become aware of other dermatology expertise in the UK (at Manchester University) and this is likely to be favourable to their business in the future.

G.8 Biotech's investment at Newcastle University has already proven to be successful. The first of the company's products to be commercialised was developed in Newcastle. This was Skinphysical which measures the damage to a person's DNA caused by ultraviolet radiation from the sun.

UKTI assistance

G.9 Biotech received a range of public sector support when setting up the Newcastle facility. In addition to its own investment of £850,000, Biotech received an R&D grant for £200,000 from One NorthEast, and additional Proof of Concept funding from NStar/North East Finance.

G.10 Based on discussions with the company, we understand that UKTI's involvement was meeting the company and the Canadian High Commission in London at the start of the investment process. Whilst useful, UKTI's involvement in the investment process does not appear to have been significant in terms of the company's decision to invest. UKTI's discussions were regarded as very high level and aimed at bringing the right people together to facilitate the investment process.

Future development

G.11 Employment in Newcastle could be increased in the next few years subject to the completion of negotiations that are currently ongoing with other UK companies. Also the fact that R&D undertaken in Newcastle is proving so far to be the most commercially successful for Biotech would increase the likelihood of an expansion to the existing operation.

Innovation and R&D

G.12 All of the business activity at Biotech is R&D of innovative products that are new to the world (there are no other products around that can detect skin damage). Most of this is internal R&D but there has been some limited external involvement for non-core activities

such as the gene expression research. The average annual expenditure on R&D in Newcastle is difficult to calculate as Biotech UK does not have separate accounts from the Canadian office. Since the expenditure is project-based it can also fluctuate from year to year. However, it is usually around £250,000 per year.

G.13 The main university link is clearly with Newcastle University which hosts the company because of the expertise of the Professor of Molecular Dermatology. Since starting up the Newcastle facility, there have also been some informal discussions with Manchester University because of their expertise in the field of dermatology.

G.14 The main Biotech products highlighted earlier are close to being 'taken to market'. The company is in discussions with a number of companies (with some of these based in UK) about selling the product on for commercialisation. These companies include some major sun-care and skincare manufacturers – however due to commercial sensitivities it was not possible to speak them as part of this case study. Patents are used for all Biotech's new products.

Suppliers

G.15 When the Biotech UK laboratory was first set up in 2004, they required a lot of expensive equipment such as Bio-imager, Real Time PCR machine, DNA extracting machine and solar simulator. These were all purchased from US companies with UK sales offices (with the exception of the solar simulator, purchased from a Welsh company). Although this equipment represented a significant initial investment by the company, these costs have been partly offset by them being able to charge university staff to use the equipment.

G.16 The main ongoing costs (apart from salary costs) relate to the purchase of skin equivalent from a US company, and PCR reagents purchased from a company in West Sussex. All of other purchases are made through sales offices within the region. It was difficult for the interviewee to identify the actual costs for the Newcastle facility.

G.17 The company doubts that they have any influence at this stage on their suppliers. There were some conversations with the Welsh company about developing a specific product for Biotech's facility but this has so far failed to materialise. The only visible benefit to the company of interaction with suppliers is the subsidy they receive through ordering supplies via the University.

Customers

G.18 Again it is difficult to identify the value of annual sales for Biotech UK, as is possible with most businesses. The value of many products has still to materialise. However the sales from a limited product launch of Skinphysical generated $120,000 in corporate revenue for Biotech. For the company as a whole, their customers are diagnostic companies in cosmetics and pharmaceuticals in North America, UK and other EU countries (France, Italy, Germany). A pharmaceutical research lab in Canada is a major customer for the company as a whole. Sales are therefore mainly exports but there has been some consultancy work undertaken in the UK including for a company based in Plymouth. This company produces wristbands to monitor UV radiation levels and also sunscreen.

G.19 The perceived benefit to Biotech UK of interaction with customers is an increased knowledge and understanding of how to get a product to market. The company also incorporates customers' expectations and timescales in the way they do business.

Competitors

G.20 There are other global competitors in broader molecular research but the company is not aware of any competitors in mtDNA R&D. This would suggest that the company is bringing additional benefits to those companies that they supply.

Networks

G.21 The main network that Biotech UK is involved in is CELS (Centre of Excellence for Life Sciences) which is funded primarily by ONE. CELS manages the incubator laboratory on behalf of the university and will be important in facilitating any spillovers from Biotech UK. The network drives growth across the healthcare sector in the North East by:

- building and managing first-class business and research infrastructure (such as the incubator laboratory at Newcastle University where Biotech UK is based)
- promoting the region on the world stage through internationally recognised networks
- managing emerging technology and stimulating the formation of new business ventures
- providing business start-up management and financial assistance.

G.22 Through attending events and ongoing communication with CELS, Biotech UK has recently found out about NEPAF (the North East Proteome Analysis Facility), analytical and research laboratories based in Newcastle and Durham Universities that specialise in the identification and analysis of proteins. Biotech UK anticipates that through working with NEPAF in the future this will create additional business benefits. The company is also involved in the Bridge Club, a network of business leaders in the North East, and also an informal network of university entrepreneurs.

Analysis

Direct effects

G.23 Although the direct employment provided by Biotech is currently very small-scale (three staff, two of whom work part-time), there is the potential for the company to grow, taking on additional research staff. Biotech's most commercially successful product so far was developed in Newcastle and subject to ongoing negotiations with potential customers, it is likely that the UK operation will be expanded in the coming years.

Direct market effects

G.24 Market effects are still quite limited. Although there was significant investment in high technology equipment when the company was first set up, the scale of the business means that

ongoing purchases of supplies are also quite small and their main input (skin equivalent) is purchased from the US.

G.25 However, if we consider the university as a supplier, there are currently many benefits for it hosting Biotech UK:

- being able to retain key academic staff (the Professor from Newcastle University);
- access to expensive laboratory equipment;
- access to knowledge transfer funding (the university has been involved in Collaborative Innovation Partnership, a shorter version of KTP available in the North East);
- as a major shareholder in Biotech UK, the university will also receive some of the future profits of this ground breaking research.

G.26 The incorporation of products such as Skinphysical by cosmetics and pharmaceutical customers (some of whom are based in the UK) is likely to derive both business benefits and equally important social benefits in the early detection of cancer.

Evidence of knowledge spillovers

Horizontal

G.27 There is limited evidence so far of any horizontal spillovers. However, Biotech UK is highly involved with various academic and life sciences networks in the North East. This type of networking facilitates knowledge-sharing where it is appropriate.

G.28 Although the company is based in the university incubator alongside three other spin-out companies discussions with one of these other spin-outs suggests that cross-fertilisation is minimal. According to the interviewee, the confidentiality of both companies' work means that it is not appropriate for staff to exchange ideas.

Vertical

G.29 The company has indicated that by dealing with major cosmetics and pharmaceutical companies they have received new insights into taking a product to market. Overall these spillovers are limited.

Direction of spillovers

G.30 With the company still quite young, it is expected that Biotech UK will receive more spillover benefits from these larger companies that it is dealing with than vice-versa

Absorptive capacity

G.31 The location of the company in the university's incubator laboratory and the fact that it is well-connected with regional networks should facilitate the transfer of any spillovers.

Position in supply chain

G.32 Biotech UK will currently have limited influence over suppliers (these are much larger companies such as the one in Texas that provides the skin equivalent) but it does have the potential to have significant influence on some of its customers in the future.

Regional and spatial dimension

G.33 The company is well-integrated in the emerging life-science cluster and its increasing profile will help ONE and CELS as they seek to diversify the traditional economy and increase higher value employment in the North East. However, Biotech UK operates as part of a larger international company that has customers in various countries.

Demand for labour (skilled and unskilled) and influence on wages

G.34 The company is too small-scale to have any impact.

Summary table

Table G-1: Summary

Business	R&D of mitochondria DNA (mtDNA) in order to design tests for the early detection of cancer.
Choice of UK	Based on relationship between parent company and the Newcastle University Professor
Assistance from UKTI & other public agencies	The company believes UKTI may have been involved in the early days meeting the company's management and the Canadian High Commission in London. More direct support provided by ONE and CELS, which the company has found very useful.
Effect of assistance	Public sector support has facilitated the process, but did not affect the original decision to set up in Newcastle so that they could access the experience and IP of the Newcastle University Professor
Benefit to clients	Still early days of research commercialisation but new technology will have significant benefits for cosmetics and pharmaceutical companies
Benefit to suppliers	No evidence of benefits to any suppliers
Benefits to network	Possibly some benefits to other CELS members but no evidence of cross-fertilisation with spin-out companies co-located at the CELS incubator at Newcastle University.
Effect on competitors/market partners	No competitors in mitochondria DNA R&D.
Commitment to market	High – the critical link is between the company and Professor still employed by the university.
Direct effects – the economic activity supported by the firm itself	Currently three members of staff (two part-time) but plans to increase the research staff subject to ongoing negotiations to take existing products to market.
Direct market effects	Potential customer benefits for customers – consultancy work provided for UK based manufacturer of sunscreen and wristbands to monitor UV radiation levels.
Evidence of spillovers (horizontal and vertical)	Limited evidence of spillovers but possibly some with other CELS members

Business	R&D of mitochondria DNA (mtDNA) in order to design tests for the early detection of cancer.
Direction of spillovers	Company still quite young, therefore Biotech UK will receive more spillover benefits from larger customers that it is dealing with rather than vice-versa.
Absorptive capacity	Absorptive capacity provided by the emerging life sciences cluster in the NE
Position in the supply chain	Limited influence over suppliers but potential to have significant influence on customers
Export-orientation	Most of the company's sales are global (with a significant element in the US).
Regional and spatial dimension	Benefits could be worldwide as the company seeks to commercialise ground-breaking designs for testing for early detection of cancer. Increased profile would help NE attempts to develop a life sciences cluster as part of the drive to diversify traditional economy and raise productivity.
Demand for labour (skilled and unskilled) and influence on wages	Too small

Source: SQW

Annex H: Chinese Telecoms Inc

Overview

Company background

H.1 For Chinese Telecoms Inc (CT) was founded in Shenzhen, China in 1988 and is now one of the world's largest players in the global telecommunications market. CT provides end to end products for the business to business market. As such it produces equipment (eg landlines), mobile terminals (handsets) and wireless modems (USBs). CT is, for instance, one of the top three suppliers in the global GSM (Global System for Mobile Communications) market, serving over 300 million GSM users worldwide.

H.2 In 2001 CT established a small representative office in London of three people. In 2003 they moved to Basingstoke where they now operate out of two sites, the administrative head office and another location which houses their Technology Assistance Centre (TAC), which provides customers with round the clock technical support. They employ 300 permanent staff in Basingstoke but up to a further 200 CT global employees are on site at any one time working on a variety of projects. 70% of the permanent staff are local British employees.

Motivations for investment in the UK

H.3 CT cited a number of reasons for their decision to establish an operation in the UK. These included:

- English is the global language of the communications business
- the UK provides a useful base from which to tackle the European market
- the development of advanced technology in the telecommunications field in the UK
- the ease of registration of IP (compared with the US).

H.4 However, set against these advantages, CT highlighted the high cost of living as being the main drawback of the UK. As a result, CT have recently moved their European head office function from the UK to Dusseldorf on the grounds that it is a less expensive place to do business and the Shengen arrangements make obtaining visas more straightforward.

H.5 CT chose the South East due to its proximity to their customers and its convenient transport links.

UKTI assistance

H.6 CT's original move to the UK was handled by a team from their head office in China. They established a good relationship with the Post at the British Embassy. The Post has been particularly helpful with the visa process for Chinese staff transferring to the UK. This process can be slow and was leading to CT not being able to send project staff over to the UK

quickly enough to meet customer requirements. The Post has been instrumental in gaining a fast track arrangement for CT which has solved the problem.

H.7 At the point CT moved to Basingstoke, SEEDA assisted them with their choice of location. SEEDA provided a list if 200 location choices with detailed analysis of each and helped them build a strong relationship with both the local council and central government. They also provided CT with information about UK employment law and the local business operating environment. CT report they were very satisfied with the support received.

H.8 CT are also appreciative of the attention the UK public sector is paying to them. They cited visits made by senior UKTI officers to Basingstoke and Shenzhen but also those arranged by UKTI for UK Government ministers.

Future development

H.9 CT consider themselves in the UK market for the long term and have committed on their website to growing the UK business further. As part of this, they recently opened a training centre in Basingstoke (on the same site as their TAC) in order to address training needs in their UK and European operations.

H.10 Staff development is taken seriously at CT and they aim to provide long term career development for UK staff, including progression in their Chinese operations. To this end, CT not only support international staff learning Chinese but also invite them to China to undertake a range of courses at their in house 'university' along with offering study tours around China enabling participants to get to know the country and its business environment. The rapport CT has established with its UK staff means that these opportunities are actively pursued (unlike the situation at a Japanese case study company where UK staff were so disengaged that they did not take up opportunites to learn Japanese).

H.11 CT view their biggest competitive challenge as convincing customers that they are not 'cheap and cheerful', given the reputation until recently of goods made in China. They have therefore developed a partnership with a leading US IT company with a quality brand, who are helping them establish themselves as providers of leading edge technology. Likewise on the HR front, they have teamed up with a major UK PR company who are helping them overcome international perceptions that all Chinese companies run sweatshops and employ child labour etc.

Innovation and R&D

H.12 CT's UK operation concentrates on marketing, sales and after sales service through which it provides the innovative products and solutions developed in China to its global customer base. Until recently, all R&D and university research links are handled out of China. However, UKTI has been working directly with the company in China on this subject. In January 2009, CT in Beijing outlined five technology topics in the network area on which they are looking to collaborate with the UK science base.

Suppliers

H.13 CT's Chinese parent supplies all CT UK's needs from its manufacturing sites around China.

Customers

H.14 CT's main customers in the UK include a wide range of telecommunications companies. In December 2005, CT signed a contract with the UK's leading telecoms company to deploy its multi-service access network (MSAN) and provide optical transmission products for the innovative 21CN network in which the UK company will be investing £10 billion in total over the next five years. CT was one of eight suppliers (all foreign owned) that the UK company chose to help it develop the network.

H.15 CT started discussions with the UK company as far back as 2002 and the relationship has developed positively over the intervening period. The UK Group's technology officer praises CT for their high level of innovation (confounding stereotypes of Chinese companies as manufacturers of copycat products). He also considers that his company and CT have a common culture of listening to customers that other companies do not offer.

H.16 CT also makes use of its UK facility to assist its Chinese customers. For instance, CT arranges for staff from its key Chinese client to visit the Basingstoke office to learn about the UK market and culture.

Competitors

H.17 CT's key competitors both in the UK and internationally are the foreign owned companies that form its partners in the UK network development. At the point of the award of the UK contract, CT was accused in the press of undercutting a major British company. However, a closer examination of the facts demonstrates that the British supplier had serious problems as a company dating back to an unwise business strategy pursued by a former CEO that left it exposed to the crash in the telecommunications market in 2001. In terms of the section of the overall contract on which the British company was bidding, its main rival was actually a Swedish supplier, ironically the company that took it over when it experienced further problems following the failure to secure the UK work.

Networks

H.18 CT are a member of two professional bodies. The Institute of Telecoms Professionals is the trade body for the telecommunications industry with regular events that CT see as good networking opportunities. Intellect is the main trade body for the ICT sector. CT find Intellect a useful source of information on codes of practice and regulatory developments.

H.19 CT was also a sponsor of China Now, the largest festival of Chinese culture to take place in the UK to date which ran from Chinese New Year 2008 up to the start of the Beijing Olympics. A key element of CT's involvement was its sponsorship of the Hong Kong Day at Ascot racecourse. The sponsorship covered a particular race (The CT Maiden Fillies race), branded saddle cloths and a 'Hong Kong village' featuring Chinese themed stalls. Ascot Race Course report that were delighted to have CT as a sponsor (which added considerably to

the success of the day) and feel that CT generated plenty of publicity and goodwill through their involvement.

H.20 CT are now in the process of developing a more formal strategy for promotion and community involvement. This will include both events sponsorship and corporate social responsibility activities such as their work with the Prince's Trust.

Analysis

H.21 This section analyses the benefits of CT's presence to the UK economy.

Direct effects

H.22 CT accounts for 300 permanent jobs in the South East, up from around 80 at the time of the award of part of the 21CN contract, 70% of which are held by UK nationals. Given CT's commitment to the UK market, this number looks set to grow.

H.23 However, the additional 220 jobs created since 2005 need to be viewed in light of the loss of 800 jobs at the British supplier following their failure to secure part of the 21CN contract. Even though CT is only one of eight partners in the 21CN contract, a pro rata split would suggest that it may have displaced up to 100 jobs in the UK in the aftermath of the contract award.

Direct market effects

H.24 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously.

H.25 CT's aim is to use its innovative products to increase network value for its immediate business customers whilst working towards the goal of achieving consistent communication experiences 'anywhere, anytime via any terminal' for end users. As each step brings this closer, CT is enabling its customers to experience fewer communications glitches, cut down on delays and hence increase their productivity.

H.26 The UK telecoms company have stated that they view the 21CN as enhancing their customer offer by allowing them to sell capability rather than just capacity and to provide a full customer focus instead of a simple product focus. In bottom line terms, once the 21CN network is fully operational (in 2011), the UK company considers it will allow them to make annual cost savings of £1 billion.

Evidence of knowledge spillovers

H.27 As discussed in the literature (UKTI 2006), knowledge spillovers occur when actions by one firm generate benefits which affect other firms but for which it is not remunerated through a direct market transaction. Such spillovers can be horizontal, through competition and demonstration effects, or vertical, having a beneficial effect on domestic firms outside the sector such as clients or suppliers.

Horizontal

H.28 These are intra-sectoral spillovers where domestic firms benefit from a foreign player in the same industry as their own. In the case of CT, the spillovers are likely to occur through their membership of the two relevant trade bodies, ITP and Intellect. In a competitive and interactive industry, perceived advances by one player (eg CT) will be watched carefully and imitated by others if they appear to offer an advantage.

Vertical

H.29 Vertical spillovers flow from foreign firms to industries or sectors other than their own as a result of buyer-supplier and customer linkages and are restricted here to knowledge spillovers.

H.30 CT work in close partnership with their customers. The most likely forms of knowledge spillover therefore will be their customers (depending on nationality) gaining an increased understanding of business in China or the UK and the opportunities each country has to offer. Additionally, the customers may have something to learn from CT's positive approach to staff development.

Direction of spillovers

H.31 As the literature points out, the relative impact of FDI is often assessed against the traditional theory that foreign firms are motivated by 'ownership' advantages by way of technology and management expertise which they can exploit in new markets, thereby creating an important means of transferring technology to firms in the host country in question. The example of CT supports this traditional theory in that their motivation in coming to the UK was to exploit the opportunites presented by their superior technology rather than to source technology from domestic firms.

Absorptive capacity

H.32 As the South East Regional Economic Strategy (2006-2016) evidence base sets out, the South East region has the highest concentration of knowledge intensive businesses of any region outside London. It is also second only to the East of England in terms of regional GDP accounted for by R&D expenditure. Thus its absorptive capacity can be regarded as high. This is important given the findings of Girma and Wakelin (2002) who found that positive spillovers from FDI were significant only for firms that had a low technology gap compared to foreign firms.

Position in the supply chain

H.33 Another hypothesis is that the foreign firm's position in the supply chain affects the extent to which productivity gains can occur. Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant. This should hold in the case of telecommunications companies since most domestic businesses purchase from the UK subsidiary of a global provider. CT's link with the UK telecoms company is an example of this.

Regional and spatial dimension

H.34 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI (Driffield, 2004; Girma and Wakelin, 2000). However, given that CT's customers and competitors are spread across the UK, any demonstration effects are going to be felt beyond the regional boundaries.

H.35 As CT's customers are also players in the telecommunications industry, their choice of the South East for its proximity to these firms may bear out the work of Devereux et al (2003) which found that industrial structure affects the location of new entrants, with firms in more agglomerated industries locating new plants near to others in the same industry.

Demand for labour (skilled and unskilled) and influence on wages

H.36 Driffield et al (2005) found a positive impact of inward FDI on demand for *skilled labour* only, and that this rises when the investor has some technology advantage and no labour cost advantage. CT's building up of its workface over the last five years by over 200 local positions demonstrates a clear demand for skilled staff (given that knowledge of telecoms/ICT is a prerequisite for employment at CT). Although as a Chinese company, CT will have a labour cost advantage (and clearly brings in Chinese expertise when required) the company is still keen to tap into the market for ICT literate native English speakers when it comes to marketing and selling its products in the UK market. The international opportunites that CT provides for staff to gain experience in one of major world economies of the future are likely to add to the 'bidding up' effect (of labour packages) noted in the literature.

Summary table

Table H-1: Summary

Business	Equipment producer in the global telecommunications market
Choice of UK	Technologically advanced market offering a good base to pursue opportunities in Europe. Ease of doing business given that English is the language of global telecoms and that registration of IP is straightforward in the UK
Assistance from UKTI/SEEDA/Feedback	Assistance from Chinese Post both re original move to UK and resolving subsequent visa issues. Assistance from SEEDA in finding suitable site and understanding the UK business operating environment. Very satisfied with all assistance provided.
Effect of assistance	Allowed business to start/expand UK operations smoothly. Resolution of visa problems has enabled CT to offer suitable staff to serve customers more effectively
Benefit to clients	Superior technology contributing to improved service provision and cost savings
Benefit to suppliers	N/A
Benefits to network	Demonstration effects of both superior technology and good working practices
Effect on competitors/market partners	Demonstration effect of superior technology
Commitment to market	High
Direct effects – the economic activity supported	210 UK staff employed in Basingstoke (though potential

Business	Equipment producer in the global telecommunications market
by the firm itself	displacement of up to 100 UK staff)
Direct market effects	Performance gains for UK customers generated through the benefits of CT's superior technology
Evidence of spillovers (horizontal and vertical)	Horizontal demonstration effects through networking in key trade bodies Vertical effects through partnership working with customers
Direction of spillovers	Positive spillovers for UK companies caused by CT wishing to exploit its ownership advantage
Absorptive capacity	High given the concentration of knowledge intensive businesses in the South East
Position in the supply chain	Good opportunites for productivity gains as UK customers in the sector are mainly buying from global providers such as CT.
Export orientation	Concentration on the UK market
Regional and spatial dimension	Most benefits likely to occur UK wide
Demand for labour (skilled and unskilled) and influence on wages	Demand for labour is strong. The opportunities offered by CT may be hard for UK companies to match

Source: SQW

Annex I: Korean Car Parts UK

Overview

Company background

I.1 Korean Car Parts UK is a subsidiary of the largest auto-parts company in South Korea which specialises in the manufacture, sales and export of automotive parts.

I.2 In September 2008, Korean Car Parts started trading from its new Parts Distribution Centre (PDC) at a business park in Warwickshire. Prior to this, Korean Car Parts was based 12 miles away in Staffordshire from where it supplied Korean car dealerships across the UK. It employed around 10 staff at this site.

I.3 The main activity of the business is distribution of after-sales parts for all Korean models imported from Regional Distribution Centres (RDCs) in South Korea and Eastern Europe – this will soon include the distribution of a second Korean brand auto parts as well. Each new model of car can include around 5,000 individual parts.

I.4 The decision was taken in 2006 by Korean Car Parts to look for a new site from where it could supply both Korean car dealerships across the UK. The new 220,000 ft2 facility which was only completed a couple of months ago includes 209,000 ft2 of warehouse space and 11,000 ft2 of office space. There is the potential to expand up to an additional 70,000 ft2 which they hope to use within the next five years. The 10 employees from the Staffordshire site have transferred across and an additional 14 office jobs have been created at the new site in Warwickshire. Warehousing and logistics has been sub-contracted to a logistics company which employs a further 30 staff.

I.5 Management at the Korean Car Parts site in Warwickshire has a significant level of autonomy in terms of being able to identify its own local suppliers, notably the logistics firm. However, the company's £22 million investment in the new site was ultimately approved by the company's headquarters in South Korea.

Motivations for investment in the UK

I.6 The main motivation for this investment was to be able to improve its service to the UK market of 150 Korean car dealerships, increase its distribution to dealerships in Ireland (currently only around 5% of sales) and be able to distribute parts to all second brand dealerships, a contract which they have recently been awarded.

I.7 In terms of other potential countries considered for supplying the UK market, Korean Car Parts could have expanded their Belgian headquarters. However, this would have been more costly and logistically not practical. A key factor for Korean Car Parts in deciding where to invest was to be able to provide a next day service to their customers.

I.8 Once it was decided that they would build their new Parts Distribution Centre in the UK, Korean Car Parts considered various parts of the country for their planned investment. However, there were two main factors which made the West Midlands particularly attractive:

- Proximity to their existing site in Staffordshire making it easier to retain staff ;
- The central location of the West Midlands and good transport infrastructure making it easy to serve the rest of the UK. The new Warwickshire site is located right next to the M42.

I.9 Another reassuring factor for Korean Car Parts was the presence of other main auto-parts distributors. A German manufacturer's auto-parts distribution centre was already based on the adjacent site in the same business park.

UKTI assistance

I.10 Korean Car Parts is very positive about the support and advice provided by UKTI and Advantage West Midlands' (AWM) inward investment team and the way in which the two agencies have provided a joined-up service. The company dealt initially with UKTI when they were considering various areas in the UK but then dealt more with AWM when they had decided that they wanted to stay in the West Midlands. There were specific discussions with UKTI regarding the possibility of inward investment grants. Unfortunately for the company, it transpired that they would not be eligible for these grants due to the number of anticipated jobs to be created.

I.11 Korean Car Parts met UKTI and AWM a number of times at their Staffordshire site and received information on suitable properties, design and build opportunities, key regional property developers and current opportunities, details of property consultants and advisors, and details of capital investment grants and support for training and recruitment activities.

I.12 Korean Car Parts then worked closely with AWM's inward investment team over a period of months, as the property requirement was refined and discussions took place with developers around prospective sites. Korean Car Parts particularly appreciated being taken to visit to another manufacturer's Browns Lane site in Coventry before the announcement was even made that the site was being sold. Once the company had decided on the Warwickshire site, Korean Car Parts also received some support from Warwickshire County Council in order to resolves issues with their planning application.

I.13 Although there were no meetings with Korean Car Parts management in South Korea, the information provided to them by UKTI and AWM locally was then passed on to the parent company. It is believed that overall the support from UKTI and AWM has accelerated the investment process. Support from AWM and UKTI also probably helped to persuade the company to buy a site instead of leasing.

I.14 Overall, Korean Car Parts' expectations of UKTI support were to receive guidance and support in identifying the right site. Whilst some information is available from property agents, it was reassuring for Korean Car Parts that UKTI would be impartial and take into account the wider benefits of locating in a particular area.

Future development

I.15 Korean Car Parts has only recently started trading from its new site in Warwickshire. However the company does have ambitious growth plans and there is the potential to expand

up to an additional 70,000 ft2 which they hope and plan to use within the next five years. At the moment, Korean Car Parts is the 13th largest auto-parts supplier worldwide – by 2010 it aims to be in the top ten. The fact that Korean Car Parts decided to buy a site rather than lease demonstrates the company's long term commitment to the West Midlands.

Innovation and R&D

I.16 As this site is solely a distribution facility with no manufacturing activity, there is no research and development of new products taking place. However some of the staff work closely with colleagues from Korean Car Parts' R&D centre in Frankfurt, Germany and it is hoped that in the future some R&D activity could be introduced in Warwickshire. This is certainly the aspiration of AWM as it tries to support more the creation of higher value employment in the region.

I.17 The products that Korean Car Parts distributes to the dealerships are, strictly speaking, 'new' and unique products developed for each new Korean car model. However, most of these products can not really be regarded as innovative as all auto-parts are broadly the same but adapted for each model of car.

I.18 Korean Car Parts has however, introduced new processes within its warehouse. This process innovation has involved using wireless handheld barcode technology to control warehouse efficiency and was developed in the South Korean headquarters, based on industry best practice. This type of innovation is probably just new to their particular business as they believe other companies will be developing similar processes. For example, Korean Car Parts has visited the German auto-parts facility also based in the same business park and they have similar processes to operate their warehouse. Korean Car Parts has found that other distribution companies are quite open about sharing best practice – as companies such as Korean Car Parts are authorised distributors for a particular manufacturer, they do not really have direct competitors and perhaps explains this willingness to share information.

Suppliers

I.19 Most of the company's bought in goods and services relate to the imported stock – the company usually holds around four months supply and over the year this will amount to around £6 million. Another £1 million will be spent on sub-contractor fees, most of which will be paid to the logistics company to operate their warehouse.

I.20 The logistics firm is one of the largest, privately-owned companies in Britain, headquartered in Oxford and has a global turnover of £1.4 billion. Their major customers include motor manufacturers, retailers and telecommunications firms. The logistics company has been awarded a five year contract with Korean Car Parts to provide parts warehousing and distribution to all Korean car dealers in the UK and Eire. The logistics company will handle all inbound logistics, storage management, outbound logistics, distribution management and reverse logistics.

I.21 It is likely that there will be some additional impact on Korean Car Parts' supply chain when they start distributing to the second brand dealerships. Some of this supply chain activity will

be offset by the fact that up until recently, another company based in Lancashire was responsible for supplying the second brand auto-parts.

Customers

I.22 Korean Car Parts' customers are the 150 Korean car dealerships across the UK. Annual sales to Korean car dealerships is around £15 million - this sales figure will double when they supply to the second brand dealerships as well (but the company's purchase of second brand stock and sub-contractors will then also need to increase). Currently only 5% of sales are exports. These sales are parts distributed to Ireland which the company hopes to increase in the coming years.

I.23 One of Korean Car Parts' biggest customers is a dealership based in Stoke-on-Trent. It is the UK's biggest dealer of new and used Korean motors and has 25 staff including 3 part-time staff. It has an annual turnover of £10 million. Although difficult to estimate (because of shared dealerships between different manufacturers) the average size of a Korean car dealership is likely to be around 15 employees. This would mean that around 2250 employees are based in the 150 dealers around the UK.

I.24 The Stoke dealership has bought parts from Korean Car Parts since 2005. They have some stock holding of fast moving parts but most parts are ordered as required by the customer (parts ordered before 3 o'clock arrive by noon the next day). Annual purchases from Korean Car Parts have been around £200,000. Purchases have gradually increased over time with the exception of the economic downturn of the last six months. With Korean Car Parts being the authorised distributor of Korean car parts in the UK, there are limited alternatives. Some dealers use 'better buy distributors' in continental Europe for fast moving parts. However this has never been an option for sourcing Korean car parts.

Competitors

I.25 Since Korean Car Parts is the authorized supplier to Korean car dealerships, it does not have any direct competition. There are maybe four companies in the UK that specialise in Korean and Japanese car parts and can supply 'fast-moving parts' such as brake parts and oil filters to repair companies.

Networks

I.26 The company itself is not involved in any formal networks. However, five or six employees are individual members of the Chartered Institute of Logistics and Transport (CILT) and Institute of the Motor Industry (IMI). The benefits for members are around networking opportunities (e.g. visiting the German manufacturer's site) and keeping up-to-date with information on the industry.

I.27 Following the support that has been provided in moving to the new site, Korean Car Parts is likely to become more involved in regional networking events organised by AWM. This may provide benefits for Korean Car Parts and other companies involved in these networks.

Analysis

Direct effects

I.28 The direct effects on the economy as a result of this investment are to safeguard the 10 jobs based at Korean Car Parts' Staffordshire site (staff have now transferred across to Warwickshire) and to create a further 14 jobs at the new site. Annual turnover is estimated to be around £15 million and this figure will increase with the new second brand contract.

Direct market effects

I.29 The main supply chain effect is to create business for the logistics company, their main sub-contractor responsible for operating the warehouse. However, with the logistics company being such a large company this cannot be considered additional economic output.

I.30 Based on discussions with one of Korean Car Parts' Korean car dealerships, the market effects of this investment will be an improved service for all of Korean Car Parts' customers both the Korean car dealerships that have dealt with them over the last three years but also the second brand dealerships that will soon be supplied by Korean Car Parts.

I.31 The Korean car dealership noticed a notable improvement in service when it changed its supply from a Turnbridge Wells based company to Korean Car Parts in 2005 and the new facility in Warwickshire meaning that they can then provide a higher quality service to their customers. The ability to provide next day delivery is a key benefit of Korean Car Parts being located in the West Midlands. The size of the new warehouse in Warwickshire means that the dealerships can reduce their stock-holding and associated costs, safe in the knowledge that they can get next day delivery on any ordered parts.

I.32 The Korean car dealership has also appreciated the ongoing telephone support available from Korean Car Parts. Overall the company stated that Korean Car Parts has been a lot easier to deal with compared to their previous supplier and has possibly resulted in 10% additional sales of autoparts.

I.33 These service improvements could have an impact on up to 300 Korean car dealerships around the UK possibly employing around 4,500 staff (based on an average workforce of 15 per dealership).

Evidence of knowledge spillovers

Horizontal

I.34 Horizontal spillovers refer to the benefits accrued to UK-based competitors of the foreign-owned company. With no direct UK-based (or any) competitors, any horizontal spillovers as a result of Korean Car Parts' presence in the West Midlands are likely to be more subtle. Perhaps because auto-part distributors are not in direct competition, there seems to be a high degree of openness and information-sharing regarding the development of warehouse processes. The main example of this type of relationship is the visit to the German manufacturer's distribution facility, located in the same business park. The German firm's

staff have also visited Korean Car Parts' new facility. UK based logistics will also then be aware of this sharing of best practice and this adoption/ imitation of efficient warehouse processes is one example of the spillover channel highlighted in the academic literature (Gorg and Greenaway 2004).

Vertical

I.35 These effects relate to the supply-chain spillovers. As highlighted previously, Korean Car Parts works with one main supplier, the logistics company. Although this relationship has only recently started, logistics company has adapted to new warehouse processes suggested by Korean Car Parts and vice versa. The two companies have actually been working together since April 2007 to develop warehouse design and layout (for example, the racking and mezzanine design was produced by the logistics company), and systems design and specification. There has been a mutual effort to develop the best processes. The development of these processes will probably result in 5-10% efficiency benefits to the performance of Korean Car Parts.

I.36 As it does with all its customers, the logistics company has adapted its processes to meet Korean Car Parts' needs and also the needs of their customers. The firm has experience of the automotive after-sales market (they also supply a British repair company), but have developed tailored processes for each new customer. At the new Warwickshire site, the systems processes are Korean Car Parts', but the physical processes are of the logistics company's design. Examples include the pick and pack processes, where Korean Car Parts' RF (Radio Frequency) bar-code scanners are combined with the logistics company' physical pick and pack processes utilising Process Flow, Standard Work, and Visual Management tools. The two companies have established mechanisms of knowledge transfer with formal weekly, monthly and quarterly meetings to share progress, challenges and opportunities.

I.37 The perceived benefits to the logistics company of working with Korean Car Parts are the learning that can inform other areas of their business and the unique insights into Far Eastern business and culture. The firm also hopes that by developing their relationship with Korean Car Parts it could open new opportunities in the Far East as they seek to expand their presence in new markets such as China.

Direction of spillovers

I.38 Both in terms of vertical and horizontal spillovers, these are likely to flow both ways. Korean Car Parts has a collaborative approach to dealing with both its key supplier and also its customers (they encourage quarterly feedback from the dealerships and have invited the dealers to visit the new site). Similarly the company is working closely with other manufacturer distribution facilities (e.g. the German company) to share knowledge on efficient and effective warehouse processes.

Absorptive capacity

I.39 In this particular case, one would assume there to be a high degree of absorptive capacity in the regional economy. The automotive cluster in the West Midlands has 1500 companies,

employing 115,000 people with total turnover of around £13 billion. Korean Car Parts is also located in close proximity to other auto-distribution facilities.

I.40 However, discussions with AWM highlighted the fact that at the moment Korean Car Parts currently has quite a low profile (there is currently very little signage at the business park), part of which may be intentional since they hold a lot of expensive stock in their warehouse. This is likely to change as the company becomes more engaged in AWM organised events in the future.

Position in supply chain

I.41 Since Korean Car Parts has such a close relationship with its main supplier (not counting the actual imported stock) productivity benefits are likely to accrue to both supplier and those customers (dealerships) being provided with an improved service.

Regional and spatial dimension

I.42 Korean Car Parts' customers are located across the UK and so any spillover effects are likely to be widespread. However, Korean Car Parts were attracted to the West Midlands by the automotive cluster there and the positive interaction with the German parts distributor would appear to be evidence of the benefits of agglomeration. This bears out the findings of Devereux et al (203) who found that new foreign owned plants often choose to locate near to other foreign owned plants within the same industry.

Demand for labour (skilled and unskilled) and influence on wages

I.43 Wages in automotive distribution tend to be higher than other warehousing jobs because of higher skill requirements but Korean Car Parts' wages are probably in line with sector average. Overall it is unlikely to have had an impact on local/regional demand for labour as it is still relatively small scale.

Summary table

Table I-1: Summary

Business	Distribution of auto-parts to 150 Kia dealerships across the UK
Choice of UK	UK base was required in order to be able to provide next day service to UK Korean car dealerships
Assistance from UKTI/AWM	Support was considered to be very useful and thought that the two agencies 'worked very well together'.
Effect of assistance	Accelerated the whole investment project and persuaded the company to buy a new site rather than simply just leasing
Benefit to customers	Improving quality and speed of service and reducing the need for stock-holding at individual dealerships
Benefit to suppliers	Providing new contract for UK-based logistics supplier with potential for more work in the Far East
Benefits to network	No visible benefits to other members of CILT and IMI. However, close relationship with AWM may result in Korean Car Parts becoming involved in regional networking events in the future

Business	Distribution of auto-parts to 150 Kia dealerships across the UK
Effect on competitors/market partners	No real competitors since it is the authorised distributor
Commitment to market	High. Decided to buy new site instead of leasing and have opportunity to expand premises over the coming years
Direct effects – the economic activity supported by the firm itself	The investment safeguarded 10 jobs and has created an additional 14 jobs.
Direct market effects	Warehouse employment (30 jobs) sub-contracted to a logistics company and temporary construction jobs involved in building the new facility. Productivity benefits and reduced costs for dealerships.
Evidence of spillovers (horizontal and vertical)	Horizontal effects evidenced by sharing of best practice in warehouse processes with other auto-distributors. Vertical effects highlighted by close relationship with the logistics company in designing and operating the warehouse. Two way communication with dealers as well.
Direction of spillovers	Horizontal and vertical spillovers likely to flow both ways due to collaborative approach with supplier and customers and sharing of best practice with other auto-distribution facilities.
Absorptive capacity	Should be high because of the importance of automotive manufacturing and logistics in the West Midlands. However, lack of profile may limit its influence.
Position in the supply chain	One main supplier/sub-contractor and all sales to dealerships in the Korean Car Automotive Group.
Export-orientation	Limited export activity – currently only 5% of sales are exports (to Ireland).
Regional and spatial dimension	Widespread benefits because of location of dealerships.
Demand for labour (skilled and unskilled) and influence on wages	Limited as relatively small scale

Source: SQW

Annex J: Computerised Machine Tools UK

Overview

Company background

J.1 Computerised Machine Tools (referred to as CMT) is the world's largest manufacturer and supplier of CNC (Computer Numerical Control) machine tools and manufacturing systems. The company is headquartered in Japan and has eight factories worldwide – in the UK, US, China, Singapore and four in Japan. In 2007, the company's global turnover was estimated at over $2 billion.

J.2 CMT started exporting to the US in the 1960s with a factory being opened there in 1974. The company then started exporting to Europe. However serving the European market from either Japan or the US was proving to be expensive and time-consuming and so the company decided to open a factory in Europe. Germany was considered but, mainly due to the language issue, it was decided that the UK would be the best choice where there was also a good pool of design and engineering expertise.

J.3 The initial investment in the UK was to set up a sales office in Worcestershire in 1981. Six years later, the company opened its European factory, also in Worcestershire, and CMT UK now employs a workforce of 560 (including 11 part-time staff). In 1994, the site became the company's European headquarters, overseeing activity in the 15 technology and technical centres across Europe.

J.4 Over the years there has been a programme of significant expansion at CMT UK. The original factory of 16,000 m2 was increased to 25,000 m2 in 1996. The factory was then expanded to 29,000 m2 in 2007 and is currently in the process of building a new factory showroom which will double their exhibition space to 1200 m2 and create further office space.

J.5 The main activity of CMT UK is manufacturing and selling machine tools. Sales also include some imported machine tools made in the Japanese factories. The site can identify its own suppliers but decisions to expand are referred to Japan as are the purchases of major items (e.g. the current building of a new showroom). There is some capability in terms of new product design with 30 employees involved in R&D at the Worcestershire site. However most of the R&D activity takes place in Japan where 400 staff are involved in product development.

Motivations for investment in the UK

J.6 The main reason for setting up the factory in 1987 was to be able to serve the UK and European market. With sales staff already based in Worcestershire, they were aware of the local available sites with a particular interest in sites located close to the motorway network. Since the West Midlands was also the centre of UK's manufacturing industry it was decided to set up in Worcestershire. For this initial investment, the company received support from the DTI's grant for flexible manufacturing systems which was available to all manufacturing companies, not just foreign investors.

J.7 The main drivers for the company expanding its Worcestershire site (as oppose to building another factory elsewhere in Europe) have been the availability of land, proximity to UK and European markets (good transportation links, close to the M5), and access to raw materials (up until recently castings were sourced in the UK). Even after the new showroom is completed, the company still has enough space on its Worcestershire site for one more phase of expansion. Opening another factory in Europe would not have made sense for the company as duplicate expertise would then have been required.

J.8 In terms of the company's location in the West Midlands, the company has also benefited from a more flexible workforce than areas around Birmingham and Coventry where unions have had more of an influence on manufacturing workers. Overall the success and continuing growth of CMT UK shows that the perceived benefits of locating in the West Midlands have been realised.

UKTI & other public sector assistance

J.9 At the time of setting up the factory back in 1987, both West Midlands Development Agency and Worcester Council provided support to CMT UK. However, it should be said that with people already based in the area, they did not require a lot of external support. Again, with the recent expansion programmes, there has been no need for an agency such as UKTI to become involved since the company had already decided to invest in its existing site.

J.10 More recently there has been some contact with AWM's inward investment team. AWM, together with UKTI's R&D specialist, has been advising the company on the possibility of R&D tax credits. AWM also consider CMT UK as one of the region's 'strategic' companies and consult with them on any policy or lobbying issue relevant to manufacturing in the West Midlands.

Future development

J.11 CMT UK has been in Worcestershire for over twenty years. Due to its continued success, the company intends to continue its expansion over the coming years.

Innovation and R&D

J.12 Each year, CMT UK spends around £1.2 million on R&D – this figure basically relates to the salary costs for the 30 staff involved in new product development. Six of these employees are Japanese and on secondment to CMT UK. The company is continually developing new products designs – for example, a new design of machine tool was introduced in September 2007 (in UK, US and Japan). This is new to the company but not to the sector as it is likely that their competitors will have some sort of similar design. The company always uses product patents when appropriate.

J.13 The way in which CMT UK operates is quite different to other business models in Europe due to the high degree of automation. This is particularly important to CMT UK because of the cyclical nature of the sector – in some months 50 machines are produced, the next month 100 machines may be required. The automated system ensures that the capacity is already there and maximises the company's productivity. The company also has strong links with suppliers

who are able to interrogate their systems. These processes are new to the industry in the UK and probably Europe – consequently the company hosts many visitors from suppliers and customers from different countries to learn about these processes.

J.14 Over the last 10 years there has been some joint work with Huddersfield University in a science and engineering project but there are no firm plans for the future. The company also has informal links with Birmingham, Cranfield, Warwick and Huddersfield Universities but again have no plans for future collaboration. Occasionally the company accepts students for day visits or to do some project work (e.g. two weeks).

Suppliers

J.15 CMT UK's main inputs are the purchase of castings, pumps, motors, gauges and other materials. They also employ sub-contractors. In total, this amounts to around £50 million per year with 40% of this spent in the UK. Sixty percent of the UK spend is made in the West Midlands.

J.16 Some of the company's smaller sub-contractors are heavily dependent on CMT UK. The company has the autonomy to choose its own suppliers with the exception of major items of expenditure (such as factory expansion) where they need to get approval from Japan.

J.17 In terms of potential influence on its suppliers CMT UK tries to establish close links with its suppliers such as when developing new products so they are aware of the factory's upcoming requirements. In the case of one of these companies, a supplier of electrical mechanical controls, they have suggested innovative methods to assist CMT UK's operation and consequently this has become a fruitful relationship.

J.18 A similar relationship exists between CMT UK and another company, a supplier of sensors that are mounted on to CMT machine tools and also calibration lasers for their production equipment. Discussions with this supplier highlighted that CMT is one of their major customers, not just in the UK but also in Japan, China and the US. Although some of this business may have been generated anyway, the proximity of CMT UK has meant lowers costs with a possible positive impact on their profit margins. The supplier company has a machine tool group that meets regularly with CMT UK staff to look at developing new probing systems as technology continues to advances. The close relationship with CMT UK, together with geographic proximity and shared attitudes has all assisted the growth of this other company (estimated to be around 5% in productivity gains). As well as the UK meetings, the chairman of the supplier company occasionally travels to Japan to meet CMT's senior management.

Customers

J.19 CMT UK's annual sales are around £330 million – however this amount includes products imported from Japan. Turnover for the UK factory alone is around £100 million. For machines made in the UK, 89% of sales are exports, 85% to EU countries and 4% to non-EU European countries (Norway, Switzerland and Turkey). No machines are sold outside Europe.

J.20 CMT UK sells to customers in aerospace, automotive (not to vehicle builders but to their suppliers), energy and healthcare sectors. CMT is also the official supplier of machine tools to a leading Formula One team. However, two thirds of CMT UK's machines are sold to SMEs and for these customers the products can have a significant impact on productivity and the way they do business. Many of CMT UK's customers come to visit the factory to learn about how the machines are made (this highlights the importance of the company having sufficient exhibition space). The benefit to CMT UK of working so closely with customers is to learn more about the nature of upcoming demand from the European market.

Competitors

J.21 CMT UK's main competitors are from Japan, South Korea, Germany and the US. All of these companies sell in the UK via dealers but CMT UK does not have any domestic competitors.

J.22 It is difficult to say if they have had any impact on competitors– there are fewer manufacturing plants in the UK but this is due to the market as a whole. CMT UK is quite unique in that no other Japanese machine tool manufacturer has a factory in Europe (it is very rare for Japanese companies to manufacture outside their own country).

J.23 CMT UK may have had an impact on other manufacturing companies when recruiting its original workforce in 1987 but this flow of labour has not been such a major issue more recently. No one has left the company to set up their own machine tool business.

Networks

J.24 CMT has been very active in the Manufacturing Technologies Association (MTA). The interviewee has been Vice President and Treasurer and CMT UK's MD is now Vice President. The company has also been involved in the local Chamber of Commerce and EEF (Engineering Employees Federation) West Midlands. EEF has a national membership of 6,000 companies (1,000 of which are based in the West Midlands).

J.25 The company finds it difficult to quantify the business benefit of being involved in these networks but the key issues appear to be the opportunity to meet other businesses and keep up-to-date with market trends. For example, the MTA organises an exhibition every year and there are networking events to find out what is going on in the market. The MTA also produces statistics and forecasting reports. The EEF also provides advice on Health and Safety, environmental issues and Human Resources.

Analysis

Direct effects

J.26 Over the last 20 years, CMT UK has generated around £1.4 billion in output with limited displacement (no UK competitors) and a high proportion of sales being exports. The company currently provides employment for 560 staff, most of whom live locally and who would find it difficult to find similar employment elsewhere.

J.27 Based on the company's financial data provided for the last year, it generates £50 million in GVA which is just under £90,000 GVA per employee and nearly three times the regional manufacturing average of £36,000 (albeit this average is from 2004)[12].

Direct market effects

J.28 A close working relationship between CMT UK and both its suppliers and customers is estimated to have generated productivity gains for these companies. One supplier interviewed as part of this case study, also became a customer and was able to customise the machine tools that they purchased from CMT UK.

Evidence of knowledge spillovers

Horizontal

J.29 Due to CMT UK's high profile in both MTA and EEF (represented on the boards of both organisations), the company is likely to have had an influence over other network members. Discussions with EEF indicated that CMT has acted as a demonstrator site for technology and best practice hosting visits from other EEF members.

J.30 Another company highlighted CMT's importance as a role model for other smaller UK-based manufacturers. In sectors like machine tools manufacturing, too often companies cut back their investment in innovation in times of recession. Meanwhile, German and Japanese companies continued to improve the quality of their designs and therefore benefit in the longer term. The interviewee was referring primarily to the recession in the early 1990s but this could easily also apply to the current period of economic instability.

Vertical

J.31 In some cases a supplier to a UK site of a foreign owned company can then become a supplier to another site of the same parent company which can be considered as a positive spillover of FDI. This is the case for one of CMT UK's suppliers which now also supplies CMT in the US. This is clearly a positive bi-product of a successful supplier-buyer relationship in the UK.

Direction of spillovers

J.32 It is expected that CMT UK will have received some benefits from their involvement in these networks (otherwise why would they give up their time) but most of the spillovers are likely to impact on other companies that can learn from CMT's experience and knowledge of the industry.

Absorptive capacity

J.33 Manufacturing remains a key industry in the West Midlands, accounting for over a quarter of the region's GVA and generating GVA per employee 30% above the regional average. The industry comprises 19,000 companies employing over 362,000 people and turning over £45

[12] 2004 figure for GVA per employee in manufacturing in the West Midlands taken from BERR's *Regional Competitiveness & State of the Region* (2008)

billion each year. This illustrates high absorptive capacity for any spillover benefits stemming from CMT UK's presence in Worcestershire.

Position in supply chain

J.34 Most influence is likely to be on domestic suppliers since a high proportion of sales are exports.

Regional and spatial dimension

J.35 The decision to set up in Worcestershire arose from the West Midlands being the centre of UK's manufacturing industry, bearing out Devereux at al (2003) who found that firms in more agglomerated industries tend to locate new plants near to others in the same industry. However, beneficiaries of any spillovers could be based anywhere in the UK – MTA and EEF are national networks and the interviewee considers there to be a manufacturing cluster in the UK rather than just in the West Midlands.

Demand for labour (skilled and unskilled) and influence on wages

J.36 No evidence of any impact on demand for labour primarily because of lack of UK-based competitors.

Summary table

Table J-1: Summary

Business	Manufacturer and sales of CNC (Computer Numerical Control) machine tools and manufacturing systems
Choice of UK	Expanding the existing Worcestershire site which became CMT's European HQ in 1994 to serve a growing UK and European market
Assistance from UKTI	No assistance required from UKTI for recent expansion
Effect of assistance	Not applicable
Benefit to customers	Anticipated productivity gains for companies using CMT machine tools. More exhibition space is being created for customers to learn more about the product technology
Benefit to suppliers	Joint working with suppliers to ensure mutual success and meeting the increasing market demand.
Benefits to network	High profile of CMT in MTA and EEF provides role model for smaller manufacturing companies and can provide authoritative feedback to policy developments in the region / UK
Effect on competitors/market partners	No UK based competitors. Global competitors only have sales offices and technology centres in the UK.
Commitment to market	High. Decided to buy new site instead of leasing and have opportunity to expand premises over the coming years
Direct effects – the economic activity supported by the firm itself	Safeguarding current workforce of 560 and increasing productivity of the company (already high levels of productivity)
Direct market effects	25% of inputs purchased in the WM and another 15% elsewhere in the UK.

Business	Manufacturer and sales of CNC (Computer Numerical Control) machine tools and manufacturing systems
Evidence of spillovers (horizontal and vertical)	High level of interaction between CMT and other companies in MTA and EEF and CMT able to influence policy development and lobbying. Example of vertical spillover is one of CMT UK's suppliers now supplying the US site, helping them expand overseas
Direction of spillovers	Probably more spillovers effects for other companies in the sector/region learning from CMT (than vice-versa).
Absorptive capacity	High absorptive capacity as part of the West Midlands manufacturing cluster.
Position in the supply chain	Most influence is likely to be on domestic suppliers since a high proportion of sales are exports.
Export-orientation	High levels of exporting and potential to act as role model for other domestic manufacturing exporters
Regional and spatial dimension	Beneficiaries of any spillovers could be based anywhere in the UK – MTA and EEF are national networks and interviewee considers a manufacturing cluster in the UK rather than just in the WM.
Demand for labour (skilled and unskilled) and influence on wages	Limited as relatively small scale

Source: SQW

Annex K: India Investment Bank (UK) Limited

Overview

Company background

K.1 India Investment Bank (India Invest) is the capital markets arm of a major Indian commercial bank. Founded in 1986 as a wholly owned subsidiary of the India Commercial Bank, in January 1997, India Invest issued equity to the Asian Development Bank (ADB), which now holds a 13.8% stake in it. India Invest considers that the ADB stake has given it added clout in the Asian financial markets.

K.2 India Invest sees itself as India's leading investment bank, having a presence across all investment banking products (i.e. primary debt and equity issues, secondary trading in debt and equity instruments, mergers and acquisitions, project and structured finance). India Invest has a workforce of more than 220, spread throughout its seven offices in India.

K.3 At the point of its inception in 2004, India Invest UK in London was simply a representative office, marketing the firm's activities. However, since 2006, it has been moving steadily towards becoming a full service operation. It is currently working through the processes required to gain full authorisation. At present, India Invest UK can deal, arrange and advise but is not yet able to hold clients' money. In 2007, India InvestUK moved to its own offices within the City. There are currently two (expatriate) members of staff but the new offices allow room for further staff recruitment.

K.4 India Invest UK's business expansion is currently being constrained by the slowdown in activity in the financial markets due to the 'credit crunch'. However, they can see pent up demand building from clients waiting to see an upturn before embarking upon transactions.

K.5 The firm views its key attribute as being to act as a conduit between the Indian and UK/European markets (in both directions). They enable Indian corporates to raise equity in the UK market (both via listings on AIM and through private equity deals) and facilitate cross border acquisitions. India Invest UK is noting a lot of interest by Indian companies in entering the UK market. Key sectors include energy and pharmaceuticals.

K.6 Whilst India Invest UK waits for its full accreditation two members of staff are sufficient as product development, promotion and Indian client relationship management are handled by their parent. However, once their AIM advisory business starts to pick up they will begin to recruit market specialists. These will be recruited locally as they are keen to hire individuals with knowledge of, and contacts in, the London market.

Motivations for investment in the UK

K.7 The initial planning to move India Invest beyond India began in the mid 1990s. However, it was not until 2004, with the Indian economy booming, that the firm moved ahead with its international expansion plans. India Invest examined Singapore, New York, Hong Kong and

London as they considered that each of these destinations would help then to grow their business and reach new clients.

K.8 India Invest finally decided in favour of London due to its importance as a world class financial centre and the fact its parent had been operating successfully in the London market for 80 years. India Invest saw the City of London as having the additional benefit of being well connected to their growing number of European clients. Although a wholly owned subsidiary, the investment represents a new business entity in the UK. It is a relatively modest first step and the firm will operate on a small scale for three years. Since the initial investment in 2004, the firm has spent most of its time developing networks and relationships, and building links between Indian and UK businesses.

K.9 The decision to locate in the UK is a good example of the importance of spatial agglomeration in attracting new investment into sectors and geographies with recognised strength. The agglomeration benefits are a significant determinant of comparative advantage, which in turn encourages inward investment. The key factors were:

- the City of London and its importance in the financial sector (agglomeration)
- the historic links between the UK and India and the opportunities afforded by strengthening links
- the strength of both the Indian and UK economies

K.10 Although not explicitly stated, the benefits of investing in places with a strong existing strength in the relevant field extend into ensuring that there will be access to a pool of experienced people as well as the size of the potential market. India Invest's investment also provides it with a first office in Europe as well as the synergies of working close to its parent in London.

Market interactions

K.11 India Invest is the sole Indian member of M&A International. M&A International is an association of 41 M&A advisory and investment banking firms from 40 countries. Focused on the middle market, M&A International members closed 308 transactions in 2007 worth more than US$21 billion. There are two British members. India Invest UK maintains a two-way referral system with them.

K.12 One of the British members expressed delight that India Invest had joined the network as they are M&A International's first Indian member. Their parent's network of branches throughout India gives them a commercial outreach which is very appealing to other M&A International members. India Invest has already been instrumental in arranging visits to India for M&A International members, allowing them to scope the market. The UK M&A firm are keen to work with India Invest and help them find UK targets for Indian companies to acquire. Another area of potential joint business would involve India Invest finding Indian investors for UK companies issuing equity on AIM.

K.13 As India Invest takes an arrangement only role in transactions such as loan syndications, it works with a series of partners. It naturally works closely with India Commercial Bank but

also with a number of the other Indian banks in the London market such as India Regional Bank (IRB) and two other major Indian banks. These relationships stem from the close connections the banks have in their home market. As India Invest UK's current Chief Executive puts it, 'you can't work in isolation in the London market'.

K.14 IRB report that they work closely with India Invest both in India and the UK. Loan syndications are essential in the Indian market as the low capitalisation of Indian banks means that corporates need to approach multiple banks for the size of funds they need. IRB are newcomers to the London market themselves having opened their UK subsidiary in May 2007. Being part of an established Indian bank network has been very useful as they find their feet in London. They are now branching out to work with international banks from a wide range of countries.

K.15 IRB have also made use of UKTI and Think London support in setting up and been impressed with the service. UKTI and Think London have helped IRB develop a set of UK professional service contacts which has been essential for a bank that had been purely domestic up until that point. It is UKTI's role as trusted intermediary that IRB mentioned in particular.

UKTI assistance

K.16 India Invest UK view their support as having come from Think London, although the initial contact was with UKTI. A senior executive, who handled the set up of the London office, confirmed how useful the Think London support had been. Although the parent provided general business support and initial office space, Think London provided vital assistance in sorting out visa issues and helping with the more personal aspects of an individual moving to a new country. The interviewee said that 'being in touch with Think London was like having a friend in London, before I even arrived'.

K.17 The support was described as 'vital' and it would be fair to conclude that the influence of UKTI at the outset and of Think London, to smooth the way, thereafter had an influence in India Invest's presence. Although it is not possible to assume that the investment was wholly the result of UKTI's intervention, there was a high chance that it would otherwise have located in Singapore, New York or Hong Kong.

K.18 An interesting point to note is that the perceived independence of UKTI as a trusted partner was very important in attracting the firm. The credibility of, and trust in, the agency is key in seeking to influence investment behaviour. This in turn depends on the quality of the information and service provided. Although not influential in attracting the firm, the Think London support has made it easier for the firm to operate in London. Without it, development would have been slower.

K.19 It is anticipated that there will be further employment from local markets, with financial experience over the next five years as the firm expands once it achieves authorisation.

Future development

K.20 Providing the market picks up, and India Invest UK receives its full accreditation and begins to increase the volume of deals, the firm looks set to be in London for the long term. India

Invest UK was keen to stress their commitment to the City and the example of India Commercial Bank suggests that this is genuine.

K.21 The representative from the firm openly expressed the view that inward investors should make a contribution to the host economy. He pointed to the gateway India Invest UK provides for UK companies into the Indian market, a high growth area where the UK is keen for its businesses to succeed. He was also able to point to the due diligence business they provide to local professional firms as another area of economic contribution.

K.22 What the case of India Invest UK also suggests is that attracting in a company from a country with a common business language and a shared history, enables the benefits to happen more quickly than otherwise. India Invest UK has been able to integrate on the local market in straightforward manner and to demonstrate two way benefits almost from the start. They are keen to capitalise on local knowledge but intend to do so by employing UK staff and using UK professional firms. Likewise, they consider their expertise in the Indian market can create opportunities not only for their clients but also for market partners. However, measurement of these effects is not likely to be possible given the high level of confidentiality on which City transactions rely.

Innovation and R&D

K.23 There is no clear impact on innovation and R&D as a result of this investment. The strength of the firm in the UK is its experience and networks with Indian businesses and the opportunities that this can bring UK investors. This differentiating factor that the firm offers is through what might be called "network" or "relationship" capital rather than through tangible new technology or services.

K.24 It is unlikely that this investment will have impacted on UK competitors in the sector because of the size of the firm and scale of activities to date, but there are likely to be benefits for partners within the sector (the M&A International members were examples given). Developing relationships and expertise in specific markets is critical to success in the financial sector, so India Invest UK's approach is not new. Its relationship with its parent also means that they have a strong market position in providing financial services for investors in that country. In future, with the Indian market growing rapidly, UK competitors might seek to strengthen relationships with Indian firms, India Invest UK's presence may mean that competitors have to work harder to succeed.

Suppliers

K.25 There are no significant supplier linkages, other than the purchase of office consumables, property rent, IT equipment etc on a very small scale. The relationship with their parent means that they have some access to wider advice and support. One supply relationship is the set of legal and accounting firms to which India Invest UK turns to undertake the due diligence for the transactions on which it advises. One of these law firms, which has worked extensively in the past for the parent bank in London, is looking forward to India Invest UK gaining full authorisation. The law firm is currently seeking to develop its corporate finance due diligence work and it views Indian banks as a source of work that is less likely to be affected by the current economic downturn in the UK, given the strength of their home

economy. However, until India Invest UK grows, it is unlikely to have any significant impact on the supply chain.

Customers

K.26 India Invest's main customers are in India and the UK. For its customers, India Invest brings new, direct experience of the Indian market and a set of relationships that would not otherwise be available. As a result, customers have greater information and choice, which in turn improves the operation of the market. UK investors engaging with India Invest UK, presumably do so because it provides better opportunities than would be the case otherwise.

K.27 For example, last year, when a major Indian conglomerate decided to hive off its tea blending unit, it hired India Invest to advise on the sale. India Invest UK managed to locate a UK buyer for the business, which is unlikely to have happened otherwise. For the UK buyer, India Invest UK's presence facilitated a deal that they considered to be more advantageous than the alternatives. The financial return resulting from this deal will take years to identify and it is hard to know whether this will be greater than any other course of action.

Competitors

K.28 At present, the collaborative approach of the Indian banks in London discussed above means that they claim not to be fiercely competitive with each other. This may however, change over time as their individual operations grow and they compete for a finite amount of business. India Invest UK's niche of linking UK and Indian businesses in a range of corporate finance transactions is likely to come under attack in both markets as international investment banks use their presence in both the UK and India to compete for the same business. India Invest UK may however, be protected to some extent by the fact that it is targeting middle market companies that may be unwilling or unable to pay the fees demanded by large investment banks.

Networks

K.29 By playing a role in networks, India Invest UK contributes to improving the exchange of information and the operation of the market. India Invest and its UK entity are active members of the Commonwealth Business Council (CBC). The CBC sees its role as providing leadership in increasing international trade flows, creating new business opportunities, promoting good governance and corporate social responsibility, reducing the digital divide, and integrating developing companies into the global market. It strives to provide a bridge between the private sector and governments, between emerging markets and developed ones and between small businesses and the international private sector. It has 94 member companies in 53 countries over five continents. Two years ago, India Invest helped the CBC run a conference in New Delhi. This was attended by a large number of business representatives from the UK.

K.30 Another example is India Invest's relationship with the two UK members of M&A International and the referral arrangements (which demonstrate a specific spillover mechanism) which can lead to partnerships with Indian firms, increasing trade (buying and selling) and raising awareness about investment opportunities.

Analysis

K.31 This section analyses the benefits of India Invest's presence to the UK economy.

Direct effects

K.32 At this stage India Invest UK has added a relatively small amount of activity to the market and even then not all of its actions would be wholly additional. The firm directly employs two people and to date its work has primarily involved developing contacts and networks.

Direct market effects

K.33 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously. These benefits represent a productivity gain to the UK economy and can be substantial. These are not strictly knowledge spillover effects as they are traded in the market, but they still have a positive contribution to productivity.

K.34 India Invest UK's presence will provide new expertise and opportunities for productivity gains through its facilitation of relationships. Because India Invest UK is still working towards authorisation, it limits the impact it has had on clients to date, but in the longer term the provision of new information for UK firms will allow better investment decisions to be made and therefore greater returns.

Evidence of knowledge spillovers

K.35 Knowledge spillovers work through a number of channels (Girma et al 2007, Gorg and Greenaway, 2004). Spillovers are defined as benefits which accrue to UK firms for which the foreign firms are not compensated. In this case spillover effects will come not from new R&D or processes, but through the exploitation of new relationships and access to networks for UK firms that would not have been possible otherwise. These spillovers can be horizontal, through competition and demonstration effects or vertical, impacting on domestic firms outside the sector such as clients or suppliers.

Horizontal

K.36 These are intra-industry spillovers where domestic firms benefit from foreign presence in the same industry as their own. For these to occur India Invest UK would have to impact on the way in which others (competitors and partners) in the sector operate. The most obvious examples here are the relationships with UK members of M&A International which have had some effect in raising the profile of opportunities in India. There is no evidence of other competitors changing their behaviour as a result of India Invest UK's presence, although over time, as the Indian markets grow India Invest UK's position may become more influential.

Vertical

K.37 *Vertical spillovers* flow from foreign firms to industries or sectors other than their own. These effects come mainly through a result of buyer-supplier and customer linkages and are

restricted here to knowledge spillovers. We have excluded what we called the direct market effects that are created through the provision of better or lower cost products and services to customers, which are described in the previous section.

K.38 The impact of links with suppliers is limited to the purchase of due diligence services from experienced financial companies, which represents a market transaction rather than a spillover. There is no evidence that these suppliers have changed the way they operate as a result of knowledge gained from working with India Invest UK.

K.39 Linking to customers, the other source of vertical knowledge spillovers, is through their network role, specifically their membership of the CBC and the organisation of the conference in New Delhi, which may have led to links, deals and new trade. By acting as an intermediary, India Invest UK provides UK firms (and Indian firms) with opportunities which would otherwise not have been known about or would have been more costly to identify. If this represents additional information, then it helps the market to operate more effectively, increasing overall productivity. It is possible that more of these benefits are captured by Indian rather than UK clients, although greater trade should benefit both parties. The facilitation of the conglomerate subsidiary acquisition is a good example of how this role can provide opportunities for UK companies.

Direction of spillovers

K.40 The relative impact of FDI is often assessed against the traditional hypothesis that foreign firms that are motivated by 'ownership' advantages by way of technology and management expertise will invest in FDI which will then be an important mechanism for transferring technology to firms in the host country in question. However, the literature also highlights evidence of 'technology sourcing' (Griffith et al 2004).

K.41 In this case, India Invest UK does not bring new technology or management expertise but a specific knowledge of Indian financial markets and 'relationship capital', but this also requires the agglomeration of financial activity in the City to maximise its effectiveness.

K.42 Although the emphasis has been on the opportunities that this expertise and networking affords domestic firms, India Invest UK also benefits from the spillover effects of working in the city and from participating in a range of networks. The investment in London has elements of both.

Absorptive capacity

K.43 The literature raises the importance of absorptive capacity as an important factor in spillover effects. In this case, the absorptive capacity of the financial sector in London would be assumed to be very strong and any competitive or demonstration effects would be expected to work through rapidly.

K.44 The spillover effects, through the network links between India Invest UK and other UK based partners, demonstrate the capacity of UK city financial firms to use this knowledge. The investment market within the UK is unlikely to be constrained by its ability to exploit any potential spillover effects. Although a limited example, this case would support Girma et al (2007), who found more significant spillovers from export-oriented multinationals to

domestic exporters. However, their paper attributed this to exporters being better able to take advantage of superior technology rather than increased awareness or information about new market opportunities. To exploit the spillovers that India Invest UK brings, UK firms would need to have international experience.

Position in supply chain

K.45 Another hypothesis is that the FDI's position in the supply chain impacts in the extent to which productivity gains can occur (Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant). If this were to hold on at a firm level, because India Invest UK is mainly selling rather than buying services in the UK, the chances of productivity gains are likely to be stronger. This argument is also strong for the direct market effects (productivity improvements made through market transactions). In this case study the productivity benefits for customers, through the input of new or superior FDI services are greater than the limited impact on suppliers.

Regional and spatial dimension

K.46 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI. There is little in this case to support or contradict this, although it is interesting to note that much of India Invest UK's activities will be within London, as the financial centre. Although there is no reason why potential partners could not be outside the city, this is likely to be a minority. At this stage the operation is too small to find specific examples.

K.47 India Invest's decision to locate in the City of London bears out the work of Driffield and Munday (2001) which examined the relationship between the comparative advantage of UK industries and new inward investment in these industries. They found that the spatial agglomeration of industries (such as that which occurs in the financial services in the City) is a significant determinant of comparative advantage, which in turn encourages inward investment.

Demand for labour (skilled and unskilled) and influence on wages

K.48 The case study does not provide any evidence on this.

Summary table

Table K-1: Summary

Business	Assisting Indian companies to invest/raise finance in the UK and vice versa
Choice of UK	Essential to be in the City of London as the major European financial centre
Assistance from UKTI/Think London/ Feedback	Support was considered "vital". Help with visas and practical issues about setting up in London. Very impressed: 'like having a friend in London'
Effect of assistance	Allowed smooth start to operations – avoided delays

Business	Assisting Indian companies to invest/raise finance in the UK and vice versa
Benefit to clients	Opening up business opportunites between an established and a new high growth market
Benefit to suppliers	Providing due diligence business in new area to their lawyers and accountants
Benefits to network	Helped Commonwealth Business Council run a well attended conference in New Delhi
Effect on competitors/market partners	Competitors can also be partners in syndicated deals. Indian banks especially close due to need to work together in home market.
Commitment to market	High. Their parent has been in UK for 82 years.
Direct effects – the economic activity supported by the firm itself	Currently two expatriates but as business grows intend to recruit locally
Direct market effects	To date limited by FSA regulation to work directly for clients, but likely to be source of productivity gains in future as provision of new service into growing Indian market becomes more valuable
Evidence of spillovers (horizontal and vertical)	Horizontal effects evidenced by networking activity and supported by consultations which suggest presence has increased awareness of investment opportunities in India Vertical effects more limited although example of finding UK buyer (not a client) for Indian business is evidence of firms outside the sector benefiting
Direction of spillovers	Likely to flow both ways, with both UK firms and India Invest UK benefitting from new opportunities
Absorptive capacity	No evidence that this is a barrier and the financial sector in London has a very high absorptive capacity to exploit spillover effects
Position in the supply chain	Expect to mainly sell to UK clients. Literature anticipates that there are stronger spillover benefits among industries with high proportion of FDI selling to domestic sector.
Export-orientation	Existence of modest spillovers supports research that indicates that effects are stronger where domestic industry is more export-orientated as is the case in London's financial sector.
Regional and spatial dimension	Majority of benefits are likely to accrue to UK firms in London which supports literature conclusions
Demand for labour (skilled and unskilled) and influence on wages	Too small

Source: SQW

Annex L: Adtrack UK

Overview

Company background

L.1 Adtrack was established in Toronto in 1979. It provides a number of computer based services for the publishing industry of which ad tracking is one. Ad tracking identifies and analyses advertising activity in a range of similar magazines and allows a client to see how their key competitors are performing in gaining advertising revenue. The Adtrack product is based on the latest computer software and their unique selling proposition is that this makes their offer more user friendly than that of their competitors.

L.2 Adtrack has over two hundred employees based in offices in Toronto, New York and, more recently London and India. They have over 1,400 clients and, at present, 80% of their business is conducted with American companies.

L.3 Adtrack UK began with one expatriate Canadian member of staff who carefully researched the needs of the UK market and spotted the weakness of the product of the market leader in ad tracking. As a result of the UK business developing, two local members of staff have been recruited, with a fourth hire in train. Adtrack prefers to recruit staff from the publishing industry rather than try and poach them from rivals.

Motivations for investment in the UK

L.4 The current operation constitutes Adtrack's second entry into the UK market. In the mid-1980s, the company's Canadian president ran a subsidiary in the UK which was bought out by a major publishing company. The company therefore had an understanding of what the UK market has to offer. It was a market they wished to tap with their new ad tracking product but were concerned about the cost of setting up in London. As a result, even though it was the London publishing market they wished to reach, they considered basing their operation in Ireland as Ireland has a reputation for having a highly skilled workforce but a lower cost base.

UKTI assistance

L.5 Adtrack's Canadian president handled the UK market entry. Even with his previous experience, he felt that he had a long list of 'don't knows' about the market and therefore looked for organisations that could provide the necessary support. Of these, UKTI was the one he felt had the most to offer. He used UKTI to find a suitable location and was impressed by the standard and efficiency of the service, including UKTI setting up a visit for him to London which allowed him to view six potential properties on the same day. He chose one in Croydon on the grounds that it allowed him easy access to potential London clients whilst the rental was not as high as for more centrally based properties. The finding of this suitable office was the deciding factor in Adtrack basing themselves in the UK rather than Ireland. Adtrack reported that Think London has kept in touch with them since they arrived and also

helped them with a search for a larger office last year. They are highly satisfied with the support they have received from both sources.

Future development

L.6 Adtrack UK is now considering diversifying to offer other Adtrack products in the UK market as well as looking at opportunities in Europe. However, given the differences in language and market operations, this latter development will require careful research.

Innovation and R&D

L.7 Adtrack consider that they have a 'new to world' product, given the way that their Canadian offer has needed to be fine tuned for the UK market. The UK publishing industry is significantly different from that in North America given the emphasis on weekly rather than monthly periodicals. Hence there is a need for a much swifter turnaround. In order to meet this need, Adtrack UK has developed a product which is now ahead of what the parent has to offer in Canada.

L.8 Although the Adtrack UK team decided what attributes a UK product required, the actual development work was undertaken by software teams based in Canada and India. There are no plans to move any of this capability to the UK. The aim is rather to transfer the development work increasingly from Canada to India on cost grounds.

Suppliers

L.9 Given the nature of Adtrack's business, the need for supplies is limited. They source their IT equipment from a leading international supplier and their office supplies from a local supplier in Bromley. In each case, supplies are purchased from standard ranges and hence no technical modifications are required.

Customers

L.10 One of Adtrack UK's major new clients is a large UK publishing company with a wide range of titles in its stable. The UK publisher started using Adtrack UK's product in October 2007, having previously been a client of Adtrack's main competitor. They use the Adtrack UK product to track advertisements for a number of their publications, including recruitment advertising in the magazine, Building and Building Design. The Adtrack UK product allows the UK publisher to monitor how much recruitment advertising is being achieved by rival publications and from whom (which gives them names they can then target). The UK publisher judges the success of the ad tracking in terms of increased advertising revenue achieved. Although they state it is too early to quantify the impact of the Adtrack UK service, they are highly satisfied with the product to date.

L.11 However, the ease of data manipulation also speeds up their internal processes and saves the time/cost of involving IT experts in the process. Adtrack UK's product provides the data in a way that is report ready and also allows the UK publisher to 'screen grab' copies of rival adverts, which is a function that they have not had before.

Competitors

L.12 Adtrack's key competitor in the UK is a global media research company. The global company is the leading provider of advertising information services worldwide. Based in New York it provides services in more than 40 countries. Through owned and affiliated operations, the global company reports on advertising activity in more than 80 markets. Reports cover ad occurrences across all major media. Using this information, the global company states that advertisers, media owners and agencies can keep track of competitors' marketing strategies and new product launches, track advertising market share and analyse the impact of ad spending on local sales trends.

L.13 However, in the UK, the global company's product runs on old fashioned technology and simply produces numbers on a spreadsheet which then need to be manipulated by client staff with IT expertise. Adtrack UK's product is a more user-friendly, 'plug and play' system which allows non-technical client staff to run reports in a straightforward manner. The development of this product has allowed Adtrack UK to start winning clients from their global rival.

Networks

L.14 None of the Adtrack UK team belongs to a network. The stated reason is they prefer their own approach to gaining new clients and do not find networks useful. When pressed, there appeared to be no interest in the knowledge transfer side of industry networking.

Analysis

Direct effects

L.15 The direct effects of Adtrack's presence in the UK market are limited given that it only accounts for four permanent jobs. Of these, three were displaced from the publishing industry.

Direct market effects

L.16 Direct market effects occur when a foreign firm provides goods or services which increase productivity in UK firms through the provision of new, better or lower cost products and services than were available previously. In Adtrack's case, clients can already point to cost savings in terms of IT staff time and feel they will also be able over time to demonstrate increases in advertising revenue due to use of Adtrack's superior product.

Evidence of knowledge spillovers

L.17 As discussed in the literature (UKTI 2006), knowledge spillovers occur when actions by one firm generate benefits which affect other firms but for which it is not remunerated through a direct market transaction. Such spillovers can be horizontal, through competition and demonstration effects, or vertical, having a beneficial effect on domestic firms outside the sector such as clients or suppliers.

Horizontal

L.18 These are intra-sectoral spillovers where domestic firms benefit from a foreign player in the same industry as their own. In the case of Adtrack this will only occur if their major competitor upgrades their product as a result of the competition effect produced by the presence of Adtrack's new product in the market. The fact that Adtrack do not wish to join industry networks limits the opportunities for demonstration effects to occur.

Vertical

L.19 Vertical spillovers flow from foreign firms to industries or sectors other than their own as a result of buyer-supplier and customer linkages and are restricted here to knowledge spillovers. Adtrack provide their customers with training on their products, which is not part of the remunerated package. Thus they increase the knowledge and understanding of their publishing clients in a way that goes beyond the direct market effect of product purchase.

Direction of spillovers

L.20 Driffield and Love (2007) found in their empirical research that different types of FDI generate different spillover effects and that the UK gains significantly only when firms are motivated by a strong technology ownership advantage. Adtrack are motivated by the desire to exploit their superior technology, albeit one that was developed precisely to meet the needs of the UK market. This technology ownership advantage suggests that any spillovers for the UK would be positive.

Absorptive capacity

L.21 Adtrack has chosen to establish in a region (London) with high absorptive capacity for its IT based technology. Over time this bodes well for positive competition/demonstration effects on IT-proficient domestic firms as suggested by the work of Girma and Wakelin (2002) who found that positive spillovers from FDI were significant only for firms that had a low technology gap compared to foreign firms.

Position in the supply chain

L.22 Another hypothesis is that the foreign firm's position in the supply chain affects the extent to which productivity gains can occur. Driffield et al (2002) found that where domestic firms purchase from industries with a high proportion of foreign investment, the domestic productivity gains were more significant. In the UK, domestic publishing firms are sourcing ad tracking either from Adtrack or their global competitor, both foreign owned companies.

Regional and spatial dimension

L.23 The literature suggests that spillovers tend to be restricted to within the region hosting the FDI (Driffield, 2004; Girma and Wakelin, 2000). This is likely in the case of Adtrack for the foreseeable future given that they set up in Croydon in order to sell into the London market and hence their efforts are concentrated in the region.

L.24 Devereux et al (2003) found that industrial structure affects the location of new entrants, with firms in more agglomerated industries locating new plants near to others in the same industry. In the case of Adtrack, it is the customer clustering around London that drew them to the region.

Demand for labour (skilled and unskilled) and influence on wages

L.25 Driffield et al (2005) found a positive impact of inward FDI on demand for *skilled labour* only, and that this rises when the investor has some technology advantage and no labour cost advantage. This is borne out by the example of Adtrack as their employees need to possess high level IT and publishing skills. However, the current small size of Adtrack limits the extent of any positive impact.

Summary table

Table L-1: Summary

Business	Software to help publishing companies track their advert performance against competitors
Choice of UK	Proximity to customers given face to face nature of business
Assistance from UKTI/Think London/Feedback	Helped them find cost effective office space in Croydon. Very satisfied with support
Effect of assistance	Made the difference in decision of where to locate as previously considering Ireland on cost grounds
Benefit to clients	Innovative product allowing them to speed up their processes/use less staff time. Potential to increase advertising revenue
Benefit to suppliers	N/A
Benefits to network	N/A
Effect on competitors/market partners	Winning business from key competitor on grounds of more technically advanced and user friendly software
Commitment to market	High as see good prospects. However, Canadian owner has been in UK before and sold out so dependent on market conditions
Direct effects – the economic activity supported by the firm itself	Low - 4 staff employed in Croydon.
Direct market effects	Performance gains for UK customers generated through the benefits of Adtrack's innovative ad tracking system
Evidence of spillovers (horizontal and vertical)	Horizontal through competition effects. Vertical through Adtrack training of clients
Direction of spillovers	Positive spillovers for domestic companies caused by Adtrack wishing to exploit its ownership advantage
Absorptive capacity	High absorptive capacity in the region to exploit spillovers
Position in the supply chain	Good opportunities for productivity gains as domestic customers are buying from companies such as Adtrack that are foreign owned.
Export orientation	Customers are generally UK focused so potentially less receptive to spillovers. Key competitors are multi national so much greater absorptive capacity

Business	Software to help publishing companies track their advert performance against competitors
Regional and spatial dimension	Strong regional dimension to benefits given the customer clustering in the region
Demand for labour (skilled and unskilled) and influence on wages	High with concomitant effect on wages. Hence Adtrack use the UK for sales and marketing only. R&D in undertaken In India on cost grounds

Source: SQW

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Annex N: Research tools

FDI businesses

Topic Guide

15-2-08

Questions	Prompt/coding
Company name and location	• Indicate Region
What nationality is your parent company?	• Codes from PIMS • European (other than British) • Russia or Central Asia (including Turkey) • North America • The Middle East • The Indian subcontinent (including India, Pakistan & Sri Lanka) • China • Japan and South East Asia (including Taiwan & Hong Kong) • Australia and the Pacific • South America • Africa • Other
Can you outline this project or investment for me?	PIMS codes • New UK site • Safeguarding an existing UK site • Expanding an existing UK site • Other AND Also • Merger/Acquisition • Joint venture • Greenfield • Safeguard/Retention • Expansion • R&D agreement • Global partnership • Business partnership • University agreement

Questions	Prompt/coding
When did the company start trading from this site	Year
Does the parent company currently own or operate any other businesses in the UK? **Describe number and type**	PIMS Yes/No
What is the main business activity of this UK-based firm?	PIMS uses standard SIC categories and • Manufacture • Assembly • Call centre • HQ • Distribution/sales office • After-sales service • Service delivery • Research, product, process development • Shared service
What is the main business activity of the organisation as a whole **Describe**	PIMS uses standard categories
Has this role of this site changed since the initial investment?	e.g. expanded, taken on new responsibilities, change in autonomy
Can you describe the level of autonomy in decision making that operates at this site?	Cover levels of autonomy for: • identifying local suppliers • around decisions to expand or re-invest • around innovation and R&D • markets

Questions	Prompt/coding
Motivations	
As far as you are aware, why was the decision taken to invest in the UK, on this occasion? What were the primary aims of this venture? *If not clear ask for contact at parent company who will be able to answer*	PIMS categories • To serve the UK market • To serve Europe • To serve or support other firms in the group • To keep up with competitors also locating in the UK • To be close to customers also investing in the UK • To reduce costs • To launch a new product • To be close to important centres of expertise in your industry • To be close to important centres of knowledge or research (e.g. HEIs) • To establish a European base in an English-speaking country • Other
What were the most important factors in the decision to locate in the UK *Describe*	• The availability of a knowledgeable and skilled workforce • It's potential as a gateway to other markets in the region • It being an important centre for businesses in your sector • It having a good reputation for research and innovation • It being conducive to fostering creative thinking • It having an established network of business services
	Supplement with views on drivers - whether the investment is led by markets (gap in UK or EU markets) – if so what is their competitive advantage (technology, logistics, management, design, scale etc.)
	And/or how important are costs and access to inputs – this could include labour, capital, raw materials, technology, knowledge, expertise
And why this region specifically?	
Have these advantages been realised (explain why or why not)	

Questions	Prompt/coding
When the original decision was taken by your parent company to locate your firm in the UK, was consideration given to instead locating in any other countries?	From PIMS codes • Countries within the European Community • Russia or Central Asia (including Turkey) • North America • The Middle East • The Indian subcontinent (including India, Pakistan & Sri Lanka) • China • Japan and South East Asia (including Taiwan & Hong Kong) • Australia and the Pacific • South America • Africa • Other

Questions	Prompt/coding
Support	
Who did you receive support from?	PIMS codes • UKTI directly • UKTI through a British Embassy or Consulate • UKTI with a Regional Development Agency (Name) • Other
Thinking about all of the support you received in connection with this investment, did UKTI…?	PIMS codes • Arrange a regional tour • Give your company a tailor-made presentation or report • Provide any business contacts or arrange a meeting for you in the UK • Provide any other tailor-made information • Give a presentation to your company in a group with other companies • Provide brochures, booklets or other 'off-the-shelf' publications • Direct you towards public sector financial assistance • Provide you with any political or diplomatic support **And did you…?** • Attend any receptions, dinners or other social events held outside of the UK, either at a UK Embassy or Consulate or organised by them • Attend any social or networking events held in the UK

Questions	Prompt/coding
Specifically, what were you hoping that UK Trade & Investment would be able to help with?	
What aspects of this investment, if any, have benefited or been influenced by the support you have received from UK Trade & Investment	PIMS codes ask for presence and "extent" • (a) Gaining access to prospective customers, suppliers, business partners or other people that you would otherwise have been unable to meet • (b) Gaining access to contacts at universities or other UK centres of knowledge or research that you would otherwise been unable to meet • (c) Gaining access to information that you would otherwise have been unable to come by • (d) Overcoming difficulties in recruiting suitable staff • (e) Gaining assistance with planning applications or other permits • (f) Gaining assistance with understanding or implementing legal requirements, such as company registration or tax
How has the support you have received from UK Trade & Investment influenced the operations at this site	PIMs codes ask for influence (Yes/No) and extent (1-5) • (a) Increasing the amount of Research & Development activity done at this site • (b) Increasing the firms involvement in collaborative Research & Development activity in the UK • (c) Improving access to or links with UK universities, Research & Technology Organisations (RTOs) or any other organisations that provide Research & Development services • (d) The physical location of the firm within the UK (town or region) • (e) Increasing this firm's use of UK-based suppliers at this site • (h) Increasing the level of investment in equipment, premises or other capital expenditure at this site • (i) Allowing the project to proceed more quickly • (m) Increasing the amount of training you do at this site • (n) The size or composition of the workforce at this site

Questions	Prompt/coding
To what extent did the support you have received from UK Trade & Investment influence your ORIGINAL DECISION to go ahead with this investment in the UK? Consider whether as a result of the investment is: Where partial indicate the specific aspects of this investment that have benefited from the support you have received from UK Trade & Investment	Indicate which of the following • Wholly additional (investment would not have been made at all without support) • has been brought forward (indicate the change in timing) • Has been less risky (describe how support reduced risk) • Has changed the scale or quality of the investment (describe the difference) • Has been partially additional (support has changed elements of the investment)
As a result, what impact has the support had on the regional economy. If possible quantify using examples	Potential measures include: • Value of additional sales • Additional jobs • Safeguarded employment • Reductions in costs • Changes in productivity (sales or value added per employee) • Changes in workforce composition (local employees or higher skills?)
Would similar support have been available from a UK-based source or organisation, or a source or organisation outside of the UK *From where?*	• We could have got similar support elsewhere • We could have got similar support elsewhere, but not as quickly or easily • We could have got some but not all of the support elsewhere • We probably could not have got similar support elsewhere • We definitely could not have got similar support elsewhere • None of these

Questions	Prompt/coding
Innovation and R&D	
Can I just check, does this UK site conduct any R&D or new product or service development activity? Please include R&D & new product development that is conducted <u>internally</u> and any <u>external</u> R&D & new product development activity that is commissioned by this site	**PIMS codes** • Conduct R&D internally • Commission external R&D • Conduct new product/service development internally • Commission external new product/service development • No, do not conduct R&D or NPD

Questions	Prompt/coding
Is this UK site involved in any research projects with UK universities, Research & Technology Organisations (RTOs) or any other organisations that provide Research & Development services?	PIMS Yes/No
Overall, how much does this site spend on R&D and new product or service development on an annual basis? Please include expenditure on salaries and wages as well as equipment for internal staff, and any expenditure on 'bought-in' or external R&D and product development services.	Estimate
Does this site have any contact or links established with any UK universities, Research & Technology Organisations (RTOs) or any other organisations that provide Research & Development services? If not explain why not?	PIMS Yes/No
Does this UK site deal with any significantly new products or services that have been introduced in the last three years?	PIMS Yes/No
And are these new products or services…. Add comment	From PIMS • New to your industry or sector • Completely new to the world • Or, are they just new to your business • And are they new to the UK
Have these innovations been adopted or taken on by domestic competitors, suppliers or customers Examples	
Who can we speak to? (collect details)	
Would you say that any of the business models, ways of working or technical processes employed at the UK site are new or unique?	PIMS Yes/No

Questions	Prompt/coding
And are these new models or processes….	From PIMS • New to your industry or sector • Completely new to the world • Or, are they just new to your business • And are they new to the UK
Have these innovations been adopted or taken on by domestic competitors, suppliers or customers Examples	
Who can we speak to? (collect details)	
Does this UK firm use any legal protection for any of its products or services, such as patents, copyrights, trademarks, licences or other types of intellectual property protection?	PIMS Yes/No

Questions	Prompt/coding
Suppliers	
What are the main purchased inputs (other than wages and salaries)	Describe pattern of main purchases
Can you estimate the value of your purchases from within region and/or UK	Value
If you do not source much locally, why not? **To what extent is the site free to identify its own suppliers?**	

Questions	Prompt/coding
Do you think that your presence in the market has influenced the behaviour of your suppliers within the UK in any way e.g. setting quality standards, bringing new efficiencies or transfer of technology/technological processes? *Examples and how they occurred*	
Has there been any benefit to your business (in terms of turnover/profitability) of any enhancement in products and services stemming from your interaction with independent UK-based suppliers? *Examples and how they occurred*	
Does this UK site source any goods or services that could be described as 'hi-tech' or 'highly innovative' from independent UK based suppliers	PIMS Yes or No
What, if any, was the role of UKTI in creating these effects:	*Consider how it has helped:* • find independent UK-based suppliers • Developing the relationship with these suppliers to enhance products/ services?
Has your presence led to the attraction or start up of any new suppliers	
Contact details of key suppliers mentioned	

Questions **Customers**	Prompt/coding
What is the total value of sales (turnover) from this site in the most recent financial year	Values (PIMS uses bands)
What proportion of your sales are exports	If possible show proportion within:

Questions	Prompt/coding
	• Within the UK • The rest of the EU • North America • Other (specify)
What proportion are within your organisations group of companies	
Where/who are your main customers	
Do you think that your presence in the market has influenced the behaviour of your customers within the UK in any way e.g. setting quality standards, bringing new efficiencies or transfer of technology/technological processes? *Examples and how they occurred*	
Has there been any benefit to your business (in terms of turnover/profitability) of any enhancement in products and services stemming from your interaction with independent UK-based customers *Examples and how they occurred*	
Does this UK site provide any goods or services that could be described as 'hi-tech' or 'highly innovative' to independent UK based customers	PIMS Yes or No
What, if any, was the role of UKTI in creating these effects:	Consider UKTI support in • helping you find independent UK-based customers • Developing the relationship with these customers to enhance products/services?
Has your presence led to the attraction or start up of any new customers	

Questions	Prompt/coding
Contact details of key customers	

Questions **Competitors**	Prompt/coding
Thinking about your main competitors, where are they based? *And who are they?*	PIMS codes • UK • Other countries within the European Community • USA • Other countries outside of the European Community • Other (SPECIFY)
Are you aware of any changes your UK-based competitors have made to their businesses as a result of your entry in the market? If so, please describe?	
How has your presence in the market impacted on the market for labour in your sector?	Consider: • Is there much flow of staff to and from competitors? • Describe patterns • Is this detrimental or beneficial to the sector
Contact details of key customers mentioned	

Questions **Networks**	Prompt/coding
Is your organisation a member of any UK-based trade or sector networks? If so, please describe	Note that we need to check with RDA about relevant networks within the region

Questions	Prompt/coding
Are you aware of any changes your fellow network members have made to their businesses?	Check as a result of: • Seeing the example you've set • Undertaking collaborative ventures with you
Have you made any changes to products or processes as a result?	Consider • Seeing the example of your fellow network members? • Undertaking collaborative ventures with your fellow network members?
What has been the benefit to your business (in terms of turnover/profitability) of your membership of these trade/sector networks?	
What, if any, assistance has UKTI provided I relation to networks:	Consider • Helping you join the trade/sector network? • Developing the relationship with fellow network members to enhance products/services?
Do you have any links established with UK universities, research and technology organisations (RTOs) or any other organisations that provide research and development services?	PIMS Yes/No
What benefits, if any, do you consider the university or RTO may have experienced as a result of their links with your company?	Consider • What form have these links taken • What benefits have you experienced
What, if any, assistance has UKTI provided	Consider • Helping you locate the research links? • Developing the relationship with the research base?
Key contacts?	

Questions **Increasing capacity**	Prompt/coding
To what extent has your employment of local staff increased the level of training and skills in the region/UK Would this training have taken place if the organisation had not invested?	Include numbers of trainees

Questions	Prompt/coding
Has the presence of your organisation had any impact on the levels of wages in the sector within the region?	Describe effects
In what forms of Corporate Social Responsibility, if any, is your company involved	
More generally, can you comment on whether your organisation's investment in the region has led to a net increase in output from the region (and/or UK)	

Questions **Employment details**	Prompt/coding
How many people are currently employed at this site	Show as full time and part time
How many of these positions require an employee who is educated to degree-level or equivalent?	Show as full time and part time
How many of the employees are engaged either wholly or partly in R&D activity (note BERR definition *R&D can be defined as any project to resolve scientific or technological uncertainty aimed at achieving an advance in science or technology. Advances include new or improved products, processes and services*	
Are any of these employees involved in activities that could be described as 'the development of scientific or technical knowledge that isn't commonly available'	
Of your workforce, how many	
Were recruited locally and are new to the sector	
Joined from competitors in the region	
Were brought into the company from outside the region	

Supplier businesses

Topic Guide

19-2-08

Questions	Prompt/coding
Company name and location	Indicate Region
When did the company start trading from this site	Year
What is the main business activity of this UK-based firm?	Prompt for sector, size etc.
Can you tell us, broadly, where your sales are made and if possible any other major customers that you supply	whether they are exporters (note this was considered as an important factor in the literature, i.e. exporters are more likely than non exporters to gain from spillover effects)
What do you supply to the FDI	
Over the most recent year, what value of sales have you made to the FDI site	
Has that changed over time?	
Do you supply other sites for the FDI business (provide details of sites and value of sales)	
Are these additional outputs a result of the FDI or do they replace output that would otherwise have been sold elsewhere (explain)	
In order to supply the FDI have you had to make changes to any of the following:	

Questions	Prompt/coding
Products, services	• innovation or alterations to products and services
Processes	• new processes • logistics • quality assurance
Or management	• additional training • additional recruitment (what skills) • investment in research, development and innovation processes • strategy and marketing
Are these new products, services, processes and management new to your business, the UK or the world	Describe
What has been the FDI's role in making these changes	Have any changes been led by FDI innovation or by the supplier – explain Identify any technology transfer or good practice that may be exchanged
How did you go about making these changes? (e.g. external support, work with research organisation, training providers, etc)	
Do you actively seek to develop your products, services and processes by working with customers	
And have these changes spilled over into any of your other business activities (products, processes or management) as a result?	

Questions	Prompt/coding
Has your work supplying the FDI had any other impacts on your business	For example developing better networks, introduction to other potential clients, provided important experience
Are there any negative effects? What are these?	• e.g restrictions on who you can supply, upward pressure on wages etc.
Have these changes impacted on the performance of the business overall?	• Additional employment • Safeguarded employment • Profile of employment (more specialist skills?) • Improved productivity across the business (value added per employee)
Are these impacts likely to represent additional activity at a UK level?	Reflect on whether these impacts are unique to the business or to the economy overall
Is there any movement of staff between your business and the FDI	Explain if this is viewed as positive or negative. May be secondments or permanent moves, high or low skilled.
Do you think that these effects are any different from those that would be expected in supplying a UK owned customer?	
If the FDI had not located at its current site, how do you think your business would have developed and how would your customer based have changed?	

Questions	Prompt/coding
Have the effects of supplying this FDI had any knock-on effects for your own suppliers/networks or competitors	
Has there been any public sector support to help strengthen supply links with FDI businesses? – specifically any contact with UKTI	Mention specifically UKTI, RDAs and ask about any other support Describe nature, extent and impact of any support

Customer businesses

Topic Guide

19-2-08

Questions	Prompt/coding
Company name and location	Indicate Region
When did the company start trading from this site	Year
What is the main business activity of this UK-based firm?	
Can you tell us, broadly, where your sales are made	Note whether they are exporters (this was considered as an important factor in the literature, i.e. exporters are more likely than non exporters to gain from spillover effects)
What do you buy from the FDI	Also ask whether the customer sources from other competitors to the FDI
Over the most recent year, what value of purchases have you made from the FDI site	
Has that changed over time?	
Where did you make these purchases before you used the FDI	Consider whether these are new purchases or whether they replace purchases made from another supplier – if so who

Questions	Prompt/coding
What are the advantages of sourcing goods and services from this FDI rather than the alternatives	Describe
Has the use of the FDI as a supplier changed your:	
Products, services	• innovation or alterations to products and services
Processes	• new processes • logistics • quality assurance
Or management	• additional training • additional recruitment (what skills) • investment in research, development and innovation processes • strategy and marketing
Is it possible to quantify these benefits	• Are there cost savings • Sales of new products/services • Additional sales of existing products/services • Improvements in productivity
Are these new products, services, processes and management new to your business, the UK or the world	Describe

Questions	Prompt/coding
Would these changes have happened if the FDI was not a supplier?	
What was the driver behind these changes?	Was this directly the result of contact with the FDI, ideas developed through knowledge transfer or recruitment
Do you actively seek to develop your products, services and processes by working with suppliers and/or customers	
And have these changes spilled over into any of your other business activities (products, processes or management) as a result?	
Has being a customer of this FDI had any other impacts on your business	For example developing better networks, introduction to other potential clients, provided important experience
Are there any negative effects? What are these?	• e.g restrictions on markets, additional costs, upward pressure on wages etc.

Questions	Prompt/coding
Have these changes impacted on the performance of the business overall?	• Additional employment • Safeguarded employment • Profile of employment (more specialist skills?) • Improved productivity across the business (value added per employee)
Are these impacts likely to represent additional activity at a UK level?	Reflect on whether these impacts are unique to the business or to the economy overall
Is there any movement of staff between your business and the FDI	Explain if this is viewed as positive or negative. May be secondments or permanent moves, high or low skilled.
If the FDI had not located at its current site, how do you think your business would have developed and how would your customer based have changed?	
Has being a customer for this FDI had any knock-on effects for your own customers, other suppliers/networks or competitors	Consider each in turn
Has there been any public sector support to help strengthen links with FDI businesses?	Mention specifically UKTI, RDAs and ask about any other support Describe nature, extent and impact of any support

Competitors

Topic Guide

19-2-08

Questions	Prompt/coding
Company name and location	Indicate Region
When did the company start trading from this site	Year
What is your main business activity?	
Can you tell us, broadly, where your sales are made	Note whether they are exporters (this was considered as an important factor in the literature, i.e. exporters are more likely than non exporters to gain from spillover effects)
What role do foreign owned businesses play in your sector?	• Do you compete directly with foreign owned businesses?
Has that changed over time?	
Do you have any contact with (NAME of FDI)?	For example through networks, joint projects, shared product development or resources?
What impact has their presence made in your sector, specifically the presence of (NAME of FDI)? How has it impacted on the following	

Questions	Prompt/coding
The type and quality of products and services you offer	Has the presence of FDI led to • innovation or alterations to products and services
The processes you use	Has the presence of FDI led to adoption of • new processes • logistics • quality assurance
Sales made by your business and the markets you operate in	Has the presence of FDI led to • Consider whether these have declined, changed or grown
Or management (including marketing and recruitment)	Has the presence of FDI led to • additional training • additional recruitment (what skills) • investment in research, development and innovation processes • strategy and marketing
Would these changes have happened if your FDI competitor was not in the sector?	
Where did the ideas for your changes come from?	From FDI's activities or your own responses Ideas developed through knowledge transfer or recruitment
Are these new products, services, processes and management new to your business, the UK or the world	Describe

Questions	Prompt/coding
Is it possible to quantify these effects	• Are there changes in costs • Reduction in sales • Sales from new products/services • Changes in employment • Profile of employment (more specialist skills?) • Improved productivity across the business (value added per employee
And have these changes spilled over into any of your other business activities (products, processes or management) as a result?	
Overall, what is the impact of the presence of the FDI within the sector, negative and positive?	
Are these impacts likely to represent additional activity at a UK level?	Reflect on whether these impacts are unique to the business or to the economy overall
Is there any movement of staff between your business and the FDI	Explain if this is viewed as positive or negative. May be secondments or permanent moves, high or low skilled.
If the FDI had not located at its current site, how do you think your business would have developed and how would your customer based have changed?	

University/research base

Topic Guide

21-2-08

Questions	Prompt/coding
Organisation name and location	Indicate Region
Specific department/unit	
What is the main research activity of this unit/department	
Can you describe the contacts that you have had with the FDI?	
What research services/support do you supply to the FDI	Detail specific projects
Is the output from the research essentially local to the FDI site/s in the UK or used by the parent company internationally	
In total what value of contracts have you carried out on behalf of the FDI (or if not known, over the most recent year),	Estimate value

Questions	Prompt/coding
Do you also carry out work with (or for) the parent company or related businesses based elsewhere)	If so, indicate if this was before the current site began operations or whether it is a result of this investment
Is this additional research activity as a result of the FDI or is it replacing other research work that would be done (explain)	
Are the results or IP from this work held solely by the FDI or shared with you or others?	
How has the output of the research been used by the FDI or its parent company	
Have the outputs of the research led to or likely to lead to new products/services or processes	
Are these products/services or processes new to the business/UK or to the world	

Questions	Prompt/coding
What have been the benefits for the department/research unit or organisation	Discuss how the experience/ knowledge and results have been used to strengthen your operations
As a result of your work with the FDI have there been changes to the way that you operate or the resources that you need	Consider: • Purchase of new equipment • Recruitment of new staff • Training • Quality assurance
Has the work with the FDI led to contact with other businesses in the sector?	
Does the experience of working with this (or other FDIs) differ from that working with UK based businesses?	
Is there any movement of staff between the research organisation and the FDI	Explain if this is viewed as positive or negative. Maybe secondments or permanent moves, high or low skilled.
Has there been any public sector support to help strengthen research links with FDI businesses? – specifically any contact with UKTI	Mention specifically UKTI, RDAs and ask about any other support Describe nature, extent and impact of any support

Networks

Topic Guide

19-2-08

Questions	Prompt/coding
Network name and location	Indicate Region
When did the network start operating	Year
What are the main objectives of the network	
Who are its members	Number of UK businesses and number of FDIs Business types involved
What role does the FDI play in the network	
Has that changed over time?	
What are the advantages of the FDI's presence in the network for members	Describe
Has its presence contributed to any changes in the way in which any other member businesses operate?	

Questions	Prompt/coding
Additional trade between members?	• Can this be valued
Influence on products and services	• Led to innovation or alterations to products and services
Influence on processes	• new processes • logistics • quality assurance
Or management	• additional training • research and development and innovation processes • strategy and marketing
Are these new products, services, processes and management new to the businesses in the network, the UK or the world	Describe
Specifically what has been the FDI's role in these changes?	Was this directly the result of contact with the FDI, ideas developed through knowledge transfer or recruitment.
Would these changes have happened if the FDI was not a member?	
Are there any negative effects of having the FDI as a member? What are these?	• e.g restrictions on markets, additional costs, upward pressure on wages etc.

Questions	Prompt/coding
Are these impacts likely to represent additional activity at a UK level?	Reflect on whether these impacts are unique to the business or to the economy overall
Is there any movement of staff between member businesses and the FDI	Explain if this is viewed as positive or negative. May be secondments or permanent moves, high or low skilled.
Has there been any public sector support to help strengthen links with FDI businesses?	Mention specifically UKTI, RDAs and ask about any other support